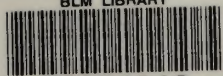


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Bureau of Land Management

FINAL

Oregon State Office

May 1983

Eugene Timber Management

Environmental Impact Statement



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United States Department of the Interior

BUREAU OF LAND MANAGEMENT

District Office
P. O. Box 10226
Eugene, Oregon 97440

IN REPLY REFER TO

May 27, 1983

This is the final environmental impact statement on the 10-year timber management plan for the Upper Willamette and Siuslaw Sustained Yield Units in the Eugene District. The statement describes the probable environmental impacts that would result from the proposed action and nine alternatives. Readers should keep in mind that the statement is an analysis of environmental consequences, not a decision.

The analysis provided here has been refined and updated as a result of public comment and internal review of the draft EIS. Forty-seven letters were received during the draft EIS comment period. All are printed in the final EIS, along with our responses.

The East-West Corridor (Alternative 5) is designated the new preferred alternative. This alternative reflects the final O&C Forest Resources Policy, issued in March by BLM Director Robert Burford. This policy will be used in making land management decisions to guide timber management plans nearing completion in BLM Districts in western Oregon.

Due to the addition of a new preferred alternative, we have established a 60-day comment period on the final EIS. Comments should be sent to the District Manager at the address above. The comment deadline is August 1, 1983.

Thank you for your interest in the planning and environmental analysis of our timber management proposals. A Record of Decision will be prepared and issued later this year.

Sincerely yours,

Dwight L. Patton
District Manager

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THE UNIVERSITY OF CHICAGO

THE DIVISION OF THE PHYSICAL SCIENCES

PHYSICS DEPARTMENT

CHICAGO, ILL.

TO THE HONORABLE CHAIRMAN OF THE BOARD OF TRUSTEES
OF THE UNIVERSITY OF CHICAGO
FROM THE PHYSICS DEPARTMENT
SUBJECT: REPORT ON THE PROGRESS OF THE PHYSICS DEPARTMENT
DURING THE YEAR 1954-1955

The following is a summary of the work done in the Physics Department during the year 1954-1955. The work was carried out under the direction of the Department Chairman, Professor [Name], and the assistance of the Department Secretary, [Name].

The work was carried out in the following areas: [Area 1], [Area 2], [Area 3], [Area 4], [Area 5], [Area 6], [Area 7], [Area 8], [Area 9], [Area 10].

The work was carried out in the following areas: [Area 1], [Area 2], [Area 3], [Area 4], [Area 5], [Area 6], [Area 7], [Area 8], [Area 9], [Area 10].

The work was carried out in the following areas: [Area 1], [Area 2], [Area 3], [Area 4], [Area 5], [Area 6], [Area 7], [Area 8], [Area 9], [Area 10].

Very truly yours,
[Signature]
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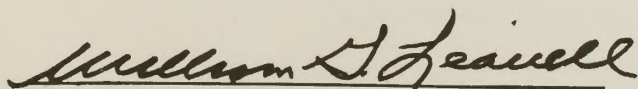
ENVIRONMENTAL IMPACT STATEMENT

Eugene Sustained Yield Units

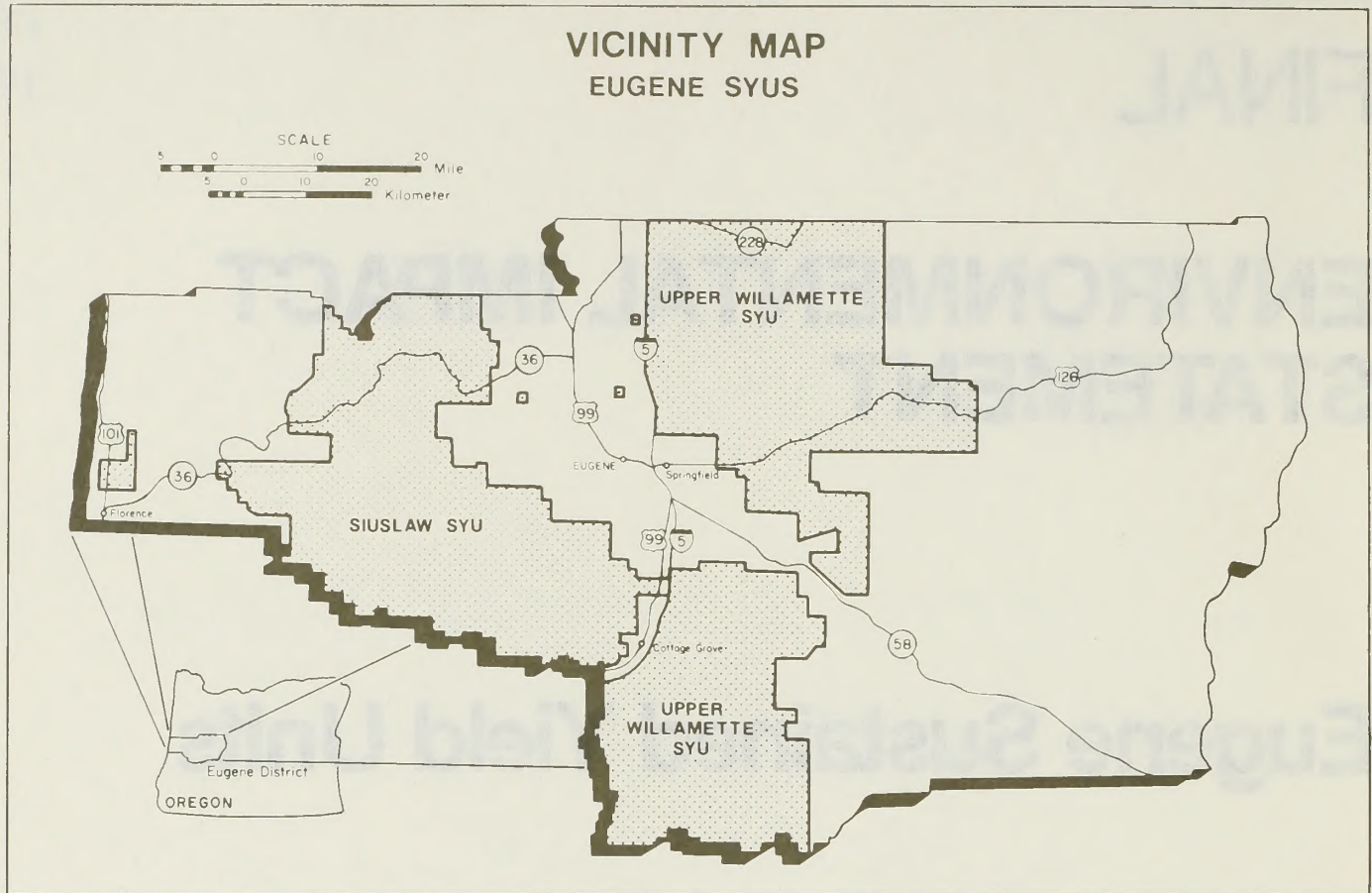
Ten-Year Timber Management Plan

Prepared by

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT


State Director, Oregon State Office

Eugene Proposed Timber Management



Draft () Final (x) Environmental Impact Statement Department of the Interior, Bureau of Land Management

1. **Type of Action:** Administrative (x) Legislative ()

2. **Abstract:** This EIS describes and analyzes the environmental impacts of implementing an updated 10-year (1984-1993) timber management plan for the 316,747 acres of public land in the Siuslaw and Upper Willamette Sustained Yield Units in the Eugene District, Oregon. The Bureau of Land Management is responsible for managing timber on public lands under the principle of sustained yield consistent with the protection of other resources. Ten alternatives are described and analyzed for environmental impacts. The alternatives analyzed include: 1) Maximum Timber Production with Even Flow Departure, 2) Maximum Timber Production, 3) Deferred Harvest, 4) Seral Stage Distribution, 5) East-West Corridor, 6) No Action, 7) Original Proposed Action, 8) No Use of Herbicides, or Credit for Fertilization and Genetics, 9) Ecosystem, 10) Maximum Ecosystem with Withdrawal of Old Growth. Alternative 5 (East-West Corridor) is the Preferred Alternative. Treatments specified by the proposal include timber harvest, site preparation, reforestation, plantation protection, precommercial thinning, fertilization and control of competing vegetation. Significant environmental impacts of the preferred alternative include increased timber harvest and employment and reduced wildlife habitat diversity; soil erosion, landsliding and stream sedimentation; and smoke intrusion problems.

3. Due to the selection of a new Preferred Alternative, a 60-day comment period on the final EIS is established. Comments will be accepted by the Eugene District Manager until August 1, 1983.

4. For further information contact:

Jon Strandjord, Planning Coordinator
Bureau of Land Management
Eugene District Office
1255 Pearl St., P.O. Box 10226
Eugene, Oregon 97401
Telephone (503) 687-6578

Summary

Introduction

This environmental impact statement (EIS) describes and analyzes the environmental impacts of implementing an updated 10-year (1984-1993) timber management plan for the Siuslaw and Upper Willamette Sustained Yield Units in the Eugene District, Oregon. Hereafter, the Sustained Yield Units will be referred to as the Eugene Sustained Yield Units or simply the SYUs. This EIS applies to actions proposed for the 316,747 BLM-administered acres within the combined SYUs. These are primarily revested Oregon and California Railroad (O&C) lands; about three percent of the combined SYUs is public domain land.

In accordance with the National Environmental Policy Act, this EIS identifies impacts on the natural and human environment associated with all alternatives. The EIS analysis is based primarily on data collected and analyzed through the Bureau planning system which included extensive public involvement. The East-West Corridor (Alternative 5) is the new Preferred Alternative. Nine other alternatives have been identified, providing a wide range of options for review and consideration.

Alternatives

Timber harvest under all alternatives would be accomplished primarily by clearcutting, with some single tree selection. Intensive timber management treatments would include construction of logging roads, site preparation with burning, mechanical means and herbicide application, planting coniferous trees (including genetically improved stock), plantation protection, plantation maintenance and release with herbicides or manual means, precommercial thinning and fertilization. Alternative 8 excludes the use of herbicides. Approximately 21,500 acres would be withdrawn because of fragile soil and reforestation problems under all alternatives except Alternative 6, which has no fragile soil or reforestation problem withdrawals, and Alternative 8, which has an additional 13,200 acres withdrawn due to reforestation problems.

Variables among alternatives include amounts of land allocated to timber production, types and amounts of intensive management practices, harvest scheduling and constraints on timber harvest to benefit other resource values. The alternatives analyzed are:

1. Maximum Timber Production with Even Flow Departure. All commercial forest lands would be allocated for intensive timber production except those managed to protect bald eagles or existing

developed recreation sites, and those withdrawn (Fragile) because they would be incapable of undergoing harvest without significant site degradation. Streamside buffers for water quality would be provided consistent with the Oregon Forest Practices Act. This alternative would allocate 286,039 acres of commercial forest land to intensive timber management. Under this alternative, an 8 million board feet (MM bd. ft.) increase to an annual timber sale program of 249 MM bd. ft. would occur during each of the first two decades. However, annual timber sales in subsequent decades (third and beyond) would fall as low as 236 MM bd. ft.

2. Maximum Timber Production. This alternative would be the same as Alternative 1 in the size of the commercial timber base and in the type of management practices, but would not depart from even flow. Thus, there would be no subsequent decline in harvest after the second decade. This alternative would produce an annual timber sale program of 241 MM bd. ft.

3. Deferred Harvest. This alternative would protect from harvest during the plan decade all lands that would be protected under the Original Proposed Action (Alternative 7). However, the allowable cut would be computed as though no land were to be managed on an extended rotation of 350 years to maintain old-growth forest values for wildlife habitat diversity. This alternative would provide a high level of timber production in the next decade while retaining 18,886 acres of the commercial forest base in old-growth stands for a decade of research on old-growth ecology. It would allocate 276,331 acres of commercial forest land to intensive timber management with an additional 360 acres under constrained timber production and would provide an annual timber sale program of 234 MM bd. ft.

4. Seral Stage Distribution. This alternative seeks a high level of timber production while preserving essential representative and functioning blocks of older seral stages. Large blocks would be 300-500 acres in size, of which at least 50 percent would be old growth (196 years plus) and the remainder in mature timber (116-195 years). Corridors consisting of 50-100 acre small blocks spaced at 1 to 1-1/2 mile intervals would be established between large blocks where possible. In the Eugene SYUs, seven large blocks and 20 small blocks totaling 3,987 acres of mature and old-growth timber would be withdrawn from the timber production base. An additional 10,071 acres of commercial timber land would be withdrawn to protect riparian zones (along third order and larger streams), bald eagles, Research Natural Areas, and sensitive botanical species. The annual timber sale program would be 230 MM bd. ft. for the 10-year period. This alternative was identified in the draft EIS as BLM's Preferred Alternative.

5. East-West Corridor (BLM's Preferred Alternative).

This alternative would create an east-west linkage of older forest habitat between National Forest in the Coast and Cascade Ranges, and the proposed systems of wildlife habitat corridors identified in South Coast-Curry Record of Decision and Roseburg final EIS. This corridor would contribute to a regional system of habitat diversity for the northern spotted owl and other species. It would allocate 265,416 acres to intensive timber management and about 10,900 acres would be managed on an extended rotation of 350 years to create the corridor. Six of the seven large block areas in the Seral Stage Distribution System (Alternative 4) are also incorporated in the corridor. Riparian zones along third order and larger streams would be protected. Timber management and forest development practices would include measures to reduce impacts to wildlife habitat in early forest seral stages. The annual timber sale program would be 223 MM bd. ft.

6. No Action (No Change). A required alternative in the EIS, this would constitute a continuation of the present annual timber sale program of 219 million board feet of timber per year. It would continue the intensive management practices and constraints identified in the 1972 allowable cut determination. Management for other resources would generally be on a case-by-case basis, rather than through a system of district-wide land use allocations.

7. Original Proposed Action. This original proposed action emphasizes a high level of timber production while managing for a variety of natural values and recreational opportunities. It would yield an annual timber sale program of 213 MM bd. ft. from an intensive timber base of 253,085 acres and an extended rotation of 350 years on an additional 23,606 acres. Approximately 9,500 acres would be withdrawn to protect wildlife, watershed and fisheries values. Timber management and forest development practices would include measures to reduce impacts to wildlife habitat in early forest seral stages.

8. No Use of Herbicides or Credit for Fertilization and Genetics.

This alternative is similar to the preferred alternative (Alternative 5) in land use allocation and timber treatments, except that herbicides would not be used. It would provide for continued use of fertilizer and planting of genetically improved trees, but the allowable cut computation would not take credit for anticipated growth increases. Vegetation control by biological, mechanical or manual methods would be prescribed to the same dollar level of investment as used for herbicides and other vegetative management practices in the proposed action. This alternative would produce an annual timber sale program of 190 MM bd. ft.

9. Ecosystem. This alternative emphasizes the protection and enhancement of natural values, while providing for a moderate level of timber production. Approximately 85,000 acres would be managed on extended rotations of 350 years to provide a high level of habitat diversity. Approximately 36,000 acres of the SYUs would be withdrawn to protect riparian zones, including those adjacent to stream orders 1 and 2. This alternative would provide a high level of protection for visual resources and a wide variety of recreational opportunities, including an allocation for primitive recreation in the Windy Peak area. It would yield an annual timber sale program of 133 MM bd. ft. from an intensive timber base of 135,026 acres and a constrained timber production base of 114,553 acres.

10. Maximum Ecosystem, with Withdrawal of Old Growth. This alternative would provide maximum protection of wildlife habitat, water quality, visual resources and other natural values. About 101,600 acres would be managed primarily for wildlife habitat values through extended rotation management of 350 years. Approximately 70,500 acres would be withdrawn from timber harvest to protect riparian zones and old-growth blocks. This alternative would provide an annual timber sale program of 71 MM bd. ft. from an intensive timber base of 58,511 acres and a constrained timber production base of 156,614 acres.

Environmental Consequences

Air Quality

The major impact on air quality would be from slash burning. Although occasional intrusions into population areas or Class I wilderness areas are expected, none are expected to violate primary air quality standards for total suspended particulates.

Soils

Impacts to soils are mainly due to road construction, landslides and compaction. Alternative 1 has the greatest long-and short-term impacts while Alternative 10 has the least. Equivalent acres lost from production range from 2,491 under Alternative 10 to 4,470 under Alternative 1. Less significant impacts include nutrient losses, dry ravelling and topsoil removal.

Water Resources

Sediment yield would increase under Alternatives 1, 2 and 3 and decrease under Alternatives 4 to 10. Water yield increases are expected under Alternatives 1 to 5, decreases under Alternatives 6 to 10. Water temperature would increase under Alternatives 1, 2 and 6.

Vegetation

Alterations to plant community structure and longevity would be the most significant impacts to vegetation on lands scheduled for timber harvest. Acres scheduled for timber harvest would range from 59,546 under Alternative 1 to 20,529 under Alternative 10. Mature and old-growth forest communities would be converted to early successional stage communities as slow-growing timber stands are replaced by young, fast-growing stands. Diversity and complexity of plant communities would diminish as maximum growth of commercial conifers is emphasized. Changes in plant communities and habitat could eliminate some plant species. Plant habitat altered by herbicides would increase under all alternatives except 8, 9 and 10. Permanent road construction during the decade would eliminate vegetation from public land, ranging from 2,107 acres under Alternative 1 to 1,626 acres under Alternative 10.

Animals

In all alternatives except 9 and 10, there would be significant long-term adverse impacts to some animal populations due to a decrease in habitat diversity and, in particular, a reduction in the mature and old-growth components of the forest. Simplification of habitats due to intensive forest management practices would add to this impact.

Harvest in riparian zones would have adverse impacts to wildlife, particularly in Alternatives 1, 2 and 6. Increases in sediment yield and/or water temperature in Alternatives 1 and 2 would negatively impact fish.

Snag-dependent wildlife would be greatly reduced in all alternatives but 9 or 10. Habitat productivity for Roosevelt elk would be reduced in all alternatives except 9 and 10.

There would be no known adverse impacts to existing habitat used by any species listed by the Federal Government as threatened or endangered. The northern spotted owl, listed by the State of Oregon as threatened, would be adversely impacted in varying degrees by all alternatives.

Recreation

The impacts of timber management operations would be both beneficial and adverse, depending on the recreational experience desired. Visitor use increases or reductions may occur in certain areas as a result of impacts to specific recreational experiences.

Alternatives 1, 2, and 6 would serve to adequately meet increasing demand for motorized recreational vehicle use and some dispersed use areas. However, demand associated with many other activities would not be met under these alternatives.

Alternatives 4, 5, 7, 8, 9 and 10 would serve to meet most recreational needs. In the long term, however, elk population decreases under all alternatives except 10 would result in lower hunting success, unless mitigating measures to maintain populations are applied. Under Alternatives 1 and 2, declining fish populations would result in a lower fishing success and some decrease in related angler use.

Cultural Resources

Appropriate measures would be taken to identify and protect cultural sites prior to ground-disturbing activities under all alternatives. Undiscovered cultural sites would be susceptible to considerable alteration and damage. Once a site is found, however, mitigation measures will be instituted to minimize or avoid damage. Under all alternatives, sites identified before logging would be managed to protect scientific and/or interpretive values.

Visual Resources

Under Alternatives 9 and 10, visual resource conditions (scenic quality) would improve. Adverse visual impacts under Alternatives 3, 4, 5, 7 and 8 would be moderate. Some highly scenic and/or sensitive areas would be protected.

Under Alternatives 1, 2 and 6, adverse visual impacts would be high with no protection provided for certain highly scenic and/or sensitive areas.

Areas of Critical Environmental Concern

Area of Critical Environmental Concern (ACEC) designation would provide guidelines to help achieve resource protection in those areas designated. Under Alternatives 3, 4, 5, 7, 8, 9 and 10, no impacts would occur to those seven areas qualified for ACEC designation. Under Alternatives 1, 2 and 6, the Fox Hollow, Camas Swale and Mohawk areas would be adversely impacted if they are not designated as Research Natural Areas or do not receive other protective management.

Special Areas

Under Alternatives 3, 4, 5, 7, 8, 9 and 10, no impacts would occur to the four potential Research Natural Areas and three Environmental Education Areas. Under Alternatives 1, 2 and 6, the seven sites with natural or environmental education values may be adversely impacted if they do not receive protective management.

Human Health

The possibility of human health being impacted by the use of herbicides is related to the toxicity of the herbicides, the likelihood of exposure and resulting dosage received. Based on current knowledge and the low risk of exposure on BLM-treated acres, an unreasonable risk to human

health from continued, careful use of herbicides is unlikely. Herbicides would not be used under Alternative 8.

Economics

Compared to timber harvest levels in Lane and Linn Counties from 1978 - 1981, Alternatives 1 through 8 would support increased employment in the timber industry and total local employment and earnings. The greatest increase in jobs would be attributable to Alternative 1, yielding 459 timber industry jobs and 1,345 total jobs. Alternative 10 would result in a net loss of 884 timber industry jobs and 2,230 total jobs.

Compared with continuation of the current timber management program, Alternatives 1 through 5 add economic activity. At the extremes, Alternative 1 could stimulate up to 885 new jobs while Alternative 10 could contract the local economy by 3,224 jobs.

Projections of public revenues are dependent on prices received for stumpage. If the value of stumpage sold in FY 1981 (\$262/MBF) is representative of receipts over the next 10-year period, then Alternatives 1 to 9 would increase O&C disbursement compared with distributions made 1978-1981. If the value of stumpage sold in FY 1982 (\$92.7/MBF) is considered representative of receipts in the coming decade, then all alternatives would yield less O&C disbursements than the 1978-1981 period.

Social

Significant social effects resulting from the economic outcomes of BLM policies would be expected only if Alternatives 9 or 10 were implemented. Under those alternatives adverse social impacts would result from reduced employment opportunities and reduced public revenues.

Since opinions about herbicide use are sharply divided, each of the alternatives will affect some people's attitudes. Based on an opinion survey, it appears that more people would be satisfied by one of the alternatives that would provide a variety of forest uses and opportunities (such as numbers 3 through 8). The alternatives that strongly emphasize one or two resource uses (such as 1, 2, 9 and 10) would satisfy fewer people and would be divisive.

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Purpose of and Need for the Action

The Bureau of Land Management (BLM) is proposing to establish a timber management plan for the Eugene District (ED) in the Siuslaw National Forest (SNF). The plan is intended to provide for the sustainable management of the forest's timber resources while also protecting its other values, such as wildlife, recreation, and aesthetics. The plan is based on the results of a timber resource inventory conducted in 1981, which identified the forest's timber resources and their potential for sustainable management. The plan also takes into account the forest's other values and the needs of the local community. The plan is intended to provide for the sustainable management of the forest's timber resources while also protecting its other values, such as wildlife, recreation, and aesthetics. The plan is based on the results of a timber resource inventory conducted in 1981, which identified the forest's timber resources and their potential for sustainable management. The plan also takes into account the forest's other values and the needs of the local community.

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CHAPTER 1

DESCRIPTION OF ALTERNATIVES INCLUDING THE PROPOSED ACTION



Purpose of and Need for the Action

The Bureau of Land Management (BLM) proposes to implement, beginning October 1, 1983, an updated 10-year timber management plan for the Siuslaw and Upper Willamette Sustained Yield Units in the Eugene District, Oregon (Figure 1-1, folded maps in the back cover pocket). Hereafter, the Siuslaw and Upper Willamette Sustained Yield Units will be referred to in this document as Eugene Sustained Yield Units (SYUs). This EIS applies to actions proposed for the 316,747 acres within the combined SYUs. These are primarily revested Oregon and California Railroad (O&C) lands. In accordance with the National Environmental Policy Act (NEPA), this EIS identifies impacts on the natural and human environment associated with the proposed action and alternatives. The 10-year timber management plan for the two SYUs provides direction for management of these lands as required by the acts mentioned below.

The Bureau's principal authority and direction to manage the O&C grant lands is found in the O&C Act of 1937 (50 Stat. 874; 43 U.S.C. 1181a., et seq.). Under this Act, O&C lands classified as timberlands are to be managed under sustained yield principles in order to provide a permanent source of timber supply, watershed protection,

stream flow regulation and recreational facilities. Intermingled public domain lands (totaling about 9,300 acres) were brought under sustained yield management principles by the Bureau's 1969 application to withdraw these lands from entry under all public land laws except certain disposal acts. Withdrawal was completed by Public Land Order 5490 (40 FR 7450 (1975)). In addition, many activities of the BLM are governed by the Federal Land Policy and Management Act of 1976 (90 Stat. 2743, 43 U.S.C. 1701). This law, often referred to as FLPMA, established policy for BLM administration of public lands under its jurisdiction.

Notwithstanding any provision of FLPMA, in the event of conflict with or inconsistency between FLPMA and the O&C Act of August 28, 1937 (50 Stat. 874; 43 U.S.C. 1181a-1181j), insofar as they relate to management of timber resources and disposition of revenues from O&C lands and resources, the latter Act shall prevail.

During the planning process, decision criteria (Appendix C) were used to evaluate alternatives and select a proposed land use allocation alternative. The results of this evaluation, combined with public input, produced the original proposed land use alternative, Alternative 7 in this EIS.

During an EIS scoping meeting held in Eugene, Oregon (April 5, 1982), participants were asked to identify issues and alternatives to be addressed in this EIS. Chapter 1 includes alternatives identified during scoping and considered appropriate for full analysis. Alternatives identified but not considered appropriate for full analysis, and the rationale for these determinations, are discussed in Appendix A. The use of suggestions received at the scoping meeting in the development of the EIS alternatives is summarized.

Management criteria to be used in developing plans for BLM-administered forest lands in western Oregon were approved by the Assistant Secretary of the Interior in July 1982 and used to develop the Seral Stage Distribution Alternative (Alternative 4) in the draft EIS. The O&C Forest Resources Policy to be used in formulating decisions on these plans was approved by the Director in March 1983. A copy of this policy is included in Appendix B. To respond to this policy, the East-West Corridor (Alternative 5) is designated BLM's Preferred Alternative in the final EIS.

The alternatives identify various timber harvest levels, management practices and design features to protect the land and other resources. This information is described in detail in the remainder of this document.

Alternatives Including the Proposed Action

Planning for the Eugene Sustained Yield Units (SYUs) focused on the 316,747 acres of public land administered by BLM. Approximately 93 percent of the Eugene District's land falls in Lane County with the remaining tracts scattered in Linn, Benton and Douglas counties.

Appendix C presents a discussion of the planning process and inventory methods used to arrive at the timber production base, allowable cut determination and other land use allocations. Acreages for land use allocations by alternative are shown in Appendix C, Table C-2.

There are 10 alternatives including the Preferred Alternative (Alternative 5) for which impacts will be analyzed in Chapter 3:

1. Maximum Timber Production with Even Flow Departure (Max./EFD)
2. Maximum Timber Production (Max. Tbr.)
3. Deferred Harvest (Def. Har.)
4. Seral Stage Distribution (S.S.D.)
5. East-West Corridor (E-W Cor., The Preferred Alternative)
6. No Action
7. Original Proposed Action (O.P.A.)
8. No Use of Herbicides or Credit for Fertilization and Genetics (No Herb.)
9. Ecosystem (Eco.)
10. Maximum Ecosystem with Withdrawal of Old Growth (Full Eco.)

For each alternative, a sustained yield harvest level (allowable cut) has been calculated based on the timber production base (see Glossary) of each SYU and the total displayed. All allowable cut computations are made in cubic feet and converted to Scribner board feet equivalence for the first decade. There is no surplus inventory (see Glossary). Variables between alternatives include amounts of land allocated to timber production, types and amounts of intensive management practices and constraints on timber harvest to benefit other resource values. These relationships are displayed in Table 1-1. Treatments and design features applicable to each alternative are discussed in the Forest Management Treatments and Design Elements section of this chapter.

All harvest levels shown in Table 1-1 are computed on the respective combinations of intensive and constrained timber production bases. Table C-2 (Appendix C) displays the breakdown by category and alternative. On areas allocated to constrained timber production (see Glossary), minimum harvest ages (MHA) vary to recognize specific wildlife diversity and visual resource management (VRM) considerations. The minimum average

diameter of trees available for final harvest in the intensive timber production base would be 12.9 inches diameter breast height (dbh). This size is normally reached at age 40 in the Eugene SYUs. The timber production base, for all alternatives except Alternative 6, excludes fragile site and reforestation problem withdrawals (approximately 21,500 acres in Alternatives 1, 2, 3, 4, 5, 7, 9 and 10 and 31,000 acres in Alternative 8) and a minimum of 210 acres of commercial forest land withdrawn to protect certain natural and cultural resources.

Appendix C explains these withdrawals in more detail.

Alternative 1 - Maximum Timber Production with Even Flow Departure

Except for protection of known federally listed threatened and endangered species and existing recreation, fragile and problem reforestation sites, all commercial forest land

Table 1-1 Comparison of Alternatives by Treatment - First Decade

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7	Alt. 8	Alt. 9	Alt. 10
	Max/EFD	Max. Tbr.	Def. Har.	S.S.D.	E-W Cor.	No Action	O.P.A.	No Herb.	Eco.	Full Eco.
Intensive Timber Production Base ¹	286,039	286,039	276,331	271,831	265,038	294,695	253,085	251,786	135,026	58,511
Constrained Timber Production Base ¹	0	0	360	360	11,653	0	23,606	11,653	114,553	156,614
Annual Timber Sale Program										
Total Million bd. ft.	249	241	234	230	223	219	213	190	133	71
Total Million cu. ft.	39.09	37.77	36.73	36.12	35.04	34.39	33.44	29.84	20.80	11.02
Treatments ²										
Transportation System (miles;acres)										
New Construction ³	351;2,107	351;2,107	339;2,031	336;2,015	320;1,921	334;2,002	339;2,031	339;2,031	351;2,103	271;1,626
Reconstruction	351; 0	339; 0	330; 0	324; 0	314; 0	308; 0	300; 0	268; 0	187; 0	100; 0
Timber Harvest (acres)										
Clearcut	44,838	43,266	42,406	41,273	39,954	36,310	38,054	33,808	22,518	16,433
Mortality Salvage	1,273	1,287	1,166	1,065	1,046	5,338	793	825	200	74
Commercial Thinning	13,429	13,429	12,926	12,877	13,084	46,800	13,631	13,631	13,435	4,022
Site Preparation (acres)										
Broadcast Burning (slash disposal)	28,651	27,647	27,097	26,373	25,500	23,202	24,317	21,603	14,389	10,501
Herbicide	8,833	8,523	8,354	8,131	7,850	7,153	7,497	0	4,436	3,237
Manual	3,363	3,245	3,180	3,095	3,000	2,723	2,854	3,800	1,689	1,232
Mechanical	3,722	3,591	3,520	3,426	3,300	3,014	3,158	4,050	1,869	1,364
Planting (acres)										
Initial plant ⁴	42,731	41,159	40,375	39,258	38,510	34,308	36,023	31,777	20,415	14,807
Replant or Interplant	10,683	10,290	10,094	9,815	9,628	8,577	9,006	7,944	5,104	3,702
Plantation Protection (acres)	14,242	13,718	13,457	13,085	12,835	11,435	12,006	10,591	6,804	4,935
Plantation Maintenance and Release (acres) ⁵	43,269	41,752	40,922	39,828	38,550	35,039	36,722	38,110	21,730	15,858
Precommercial Thinning (acres)	14,073	14,073	13,571	13,998	14,011	18,800	13,998	13,998	8,013	5,676
Fertilization (acres)	70,156	70,156	67,700	67,136	67,686	99,343	65,595	65,595	45,243	25,415

¹ See Glossary. Also refer to Land Use Allocation, Appendix C, Table C-2.

² Each treatment is described in detail following description of the alternatives.

³ Figured at the rate of 6 acres/mile of road including landings.

⁴ Under all alternatives except 10, an estimated 15,500 acres would be planted with genetically improved stock.

⁵ An estimated 11 percent of the acreages shown would be treated using methods other than chemicals. Under Alternative 8 no chemicals would be used.

would be allocated to the intensive timber base (Appendix C, Table C-2). Streamside buffers for water quality would be provided consistent with the Oregon Forest Practices Act. However, protection for riparian zones, northern spotted owls, other wildlife habitat, visual and other resource values would not be provided.

Under this alternative, an 8 MM bd. ft. increase over the even flow level would occur during each of the first two decades. However, the harvest level in subsequent decades (third and beyond) would fall as low as 236 MM bd. ft., 5 MM bd. ft. below the even flow sustained yield level. The annual timber sale program for the 10-year period would be 249 MM bd. ft.

Alternative 2 - Maximum Timber Production

This alternative consists of the same land use allocations and protective measures for resource values as Alternative 1. The only difference is that departure from even flow would not occur. Thus, the annual timber sale program would be 241 MM bd.ft. for the first and future decades.

Alternative 3 - Deferred Harvest

Allocation of 276,331 acres of commercial forest land to intensive timber management would occur under this alternative (see Appendix C, Table C-2). An additional 360 acres of highly sensitive scenic areas would be managed under extended rotation (MHA-120 years). Although included in the intensive timber base, 18,886 acres of old growth (distributed in a manner comparable to the constrained timberbase of the Original Proposed Action Alternative 7) would not be harvested during the 10-year planning period. This would provide for some old growth retention until advanced research on old growth ecology is completed. The annual timber sale program would be 234 MM bd.ft. for the proposed period. This level would be sustainable for the projection period (400 years, see Appendix C) if the old growth were harvested during the second decade. However, if the old growth were to be placed under extended rotation at the end of the first decade, the sustainable annual timber sale program would be 194 MM bd.ft.

Alternative 4 - Seral Stage Distribution

This alternative seeks a high level of timber production while preserving essential representative and functioning blocks of older seral stages (Appendix B). Large blocks would be 300-500 acres in size of which at least 50 percent would be old-growth seral stages (196 years plus) and the remainder in the mature seral stage (116-195 years). Based on a design to cover all BLM-administered land in western Oregon, one large

block would be within each seed zone (see Appendix B) at 500-foot elevational intervals where sufficient old growth exists. Corridors consisting of 50- to 100-acre small blocks containing mature and old-growth timber (primarily old growth) and spaced at 1 to 1-1/2 mile intervals would be established between large blocks where possible.

In the Eugene SYUs, seven large blocks and 20 small blocks constituting 3,987 acres of mature and old-growth timber would be withdrawn from the timber production base (Appendix C, Tables C-2 and C-3). Riparian zones along third order and larger streams, bald eagles and Research Natural Areas would be protected (Appendix C, Tables C-2 and C-3). The annual timber sale program would be 230 MM bd. ft.

Alternative 5 - East-West Corridor (BLM's Preferred Alternative)

This alternative provides an east-west linkage between National Forests in the Coast and Cascade Ranges and the proposed systems of older forest corridors presented in the South Coast-Curry Record of Decision and the Roseburg final EIS. It was designed to provide a variety of seral stages which would be distributed to minimize isolation of specialized habitats and provide opportunities for genetic interchange. This corridor would contribute to a regional system of habitat for the northern spotted owl and other species. Approximately 11,000 acres (Appendix C, Table C-2) within the corridor would be managed on an extended rotation of 350 years; this acreage includes six of the seven large block areas identified for the Seral Stage Distribution System (Alternative 4). About 360 acres would be managed on an extended rotation of 120 years to protect scenic values in the McKenzie River corridor.

An estimated 10,000 acres of commercial forest land would be withdrawn to protect riparian zones along third order and larger streams, bald eagles, Research Natural Areas and sensitive botanical species.

The annual timber sale program would be 223 MM bd. ft.

Alternative 6 - No Action

Alternative 6 constitutes a continuation of the present allowable cut of 219 MM bd.ft. from 294,695 acres allocated to timber production. Continuation of the same management practices, level of application and constraints used in the 1972 allowable cut calculation is assumed. Management trends (such as reduced tractor yarding) established over the past decade would be continued. Minimal protection would be provided for some highly scenic areas, recreational sites and wildlife habitat. Non-timber

allocations limited to 1,279 acres, include buffers for recreation areas, sensitive visual corridors and streamside corridors. Other land use allocations (Appendix C, Table C-2) and management objectives (Table 1-1) proposed under this alternative are those incorporated in the 1972 Eugene Timber Management Plan for its second decade of application.

Protection for other wildlife considerations (elk and deer thermal/survival cover, snag retention and protection for the northern spotted owl) would be provided when consistent with intensive timber production. The annual timber sale program would be 219 MM bd. ft. for the 10-year period (Table 1-1).

Alternative 7 - The Original Proposed Action

The Original Proposed Action seeks a high level of timber production while managing for a variety of natural values and recreational opportunities. Approximately 9,500 acres of commercial forest land would be withdrawn to protect riparian zones, bald eagles and Research Natural Areas. Approximately 24,000 acres would be managed under extended rotation (Appendix C, Table C-2) for visual, wildlife and old-growth ecological values. Other management practices (Table 1-1) would include measures to mitigate impacts to wildlife habitat on early seral stages. The annual timber sale program would be 213 MM bd.ft.

Alternative 8 - No Use of Herbicides or Credit for Fertilization and Genetics

This alternative consists of the same land use allocations and protective measures for resource values as the preferred alternative (Alternative 5), but the forest management treatment of applying herbicides would not be incorporated. Control of vegetation for timber management by using biological, mechanical or manual means would be prescribed to approximately the same dollar level of investment as would be used for herbicide applications in Alternative 5.

Although this alternative would incorporate the practices of fertilizer application and the planting of genetically improved stock, no credit would be taken for expected growth increases. This would produce an average annual timber sale program of 190 MM bd.ft. (Table 1-1). Other management practices and constraints (Appendix C, Tables C-2 and C-3) would be the same as the preferred alternative. This alternative has been modified from its presentation in the draft EIS, in which these issues were analyzed against the timber base and treatments of Alternative 7.

Alternative 9 - Ecosystem

Under this alternative, emphasis would be placed on protecting and enhancing natural values over timber production. Protection would be provided for riparian zones adjacent to all streams (Appendix C, Table C-3) by withdrawal from the timber production base. Approximately 114,500 acres would be managed under extended rotation for visual, wildlife and old-growth ecological values (Table C-2). A wide variety of recreational opportunities, including an allocation for semi-primitive recreation in the Windy Peak Area, would be provided. The average annual timber sale program would be 133 MM bd.ft.

Alternative 10 - Maximum Ecosystem with Withdrawal of Old Growth

Maximum protection and enhancement of wildlife habitat, water quality, visual resources and other natural values would be provided. Approximately 146,000 acres would be managed primarily for wildlife habitat values, either through withdrawal from timber harvest or management under extended rotation (Appendix C, Tables C-2 and C-3). Riparian zones adjacent to all streams and all visual values would be protected. Recreational opportunities would be provided as described in Alternative 9. The average annual timber sale program would be 71 MM bd.ft. (Table 1-1).

Forest Management Treatments and Design Elements

Table 1-1 displays, in typical operational sequence, the types and levels of treatments for each alternative including the proposed action. Following harvest by clearcut or single tree selection, forest management treatments are applied to achieve prompt reforestation and to increase subsequent growth of commercial coniferous species.

Not every treatment listed in Table 1-1 would be applied to every acre. A number of treatment combinations are possible and could be employed. The purpose of this section is to elaborate on what each treatment entails and quantify the magnitude of the actions. Treatments would be identified and scheduled through application of the recently adopted forest data system (Solutions to Operations and Reforestation Monitoring Systems-STORMS 1981). For those actions accomplished by timber sale contracts, the final determination of treatment needs would be made during timber sale planning.

Contracts, usually awarded on a competitive basis, are the means of accomplishing all timber harvest and many forest development practices. The standard and special provisions (which include mitigating measures) in a contract set forth the performance standards to be followed by the contractor in carrying out the action in accordance with applicable laws, regulations and policies. In contract preparation, selection of special provisions is governed by the scope of the action to be undertaken and the physical characteristics of the specific site. The standard provisions of the basic timber sale contract, Bureau Form 5450-3, are applicable for all timber sales. Limitations on timber harvesting and related activities, as identified in the Church Report (U.S. Congress, Senate 1973) and analyzed in the BLM Timber Management Final EIS-1975, have been adopted by BLM. Bureau manuals and manual supplements provide a variety of approved special provisions for use, as appropriate, in individual contracts. The combination of selected special provisions constitutes Section 41 of the timber sale contract (Form 5450-3).

Prior to any vegetative or ground manipulation, BLM requires a survey of the project site for plants and animals listed or proposed for listing on Federal and official State lists of threatened and endangered species. If a project might affect any listed or proposed federal threatened or endangered species or its critical habitat, every effort would be made to modify, relocate or abandon the project in order to obtain a no effect determination. If BLM determines that a project cannot be altered or abandoned, consultation with the U.S. Fish and Wildlife Service would be initiated (50 CFR 402; Endangered Species Act of 1973, as amended).

Whenever evidence of historic or prehistoric occupation is identified during BLM activities, special surveys are undertaken to determine possible conflicts in management objectives. In addition, a Class III (complete) cultural resources inventory is required on all areas to be subjected to ground disturbing activities. This is accomplished in the pre-planning stage of a treatment and the results analyzed in the environmental assessment addressing the action (BLM Manual 8100, Cultural Resources Management). Should a cultural resource be discovered during timber harvest or associated activities, operations in proximity are immediately suspended and may only resume upon receipt of written instructions from the authorized BLM officer. Procedures under 36 CFR 800 as amended (data) would then be followed including consultation with the State Historic Preservation Officer in the determinations of eligibility, effect and adverse effects.

Transportation System

Oregon Manual Supplement, Release 5-115 of April 10, 1975, would be used in preparing road construction requirements for timber sale contracts. Engineering terminology and types of construction equipment are defined in the manual supplement and specifications for all aspects of construction, reconstruction and surfacing are provided.

Methods of slope protection are provided to avoid collapse of cut-and-fill embankments. Specifications for rock pits and quarries include provisions for minimum visual intrusion, drainage and control of runoff and restoration following use.

Special stipulations are provided for the installation of stream crossing structures, such as corrugated metal culverts, so that fish passage is not impeded. These measures may include imposing gradient limitations for the structures and/or installing baffles to reduce water velocity through the culverts.

One section of the manual supplement provides design features to control and minimize erosion during road construction and throughout the design life of the road. Another section addresses soil stabilization practices including planting, seeding, mulching and fertilizing for establishment of soil-binding vegetation.

Road reconstruction is proposed for all alternatives. The miles of road to be reconstructed range from 100 miles under Alternative 10 to 351 miles under Alternative 1. Similarly, the miles of new, permanent road to be constructed during the decade would range from 271 miles under Alternative 10 to 351 miles under Alternative 1 (Table 1-1). Construction standards, i.e., stream crossing, subgrade width, ditch, cut-and-fill slope requirements, and type of surfacing would be determined during the annual timber sale planning process. Basic construction operations as well as a brief history of transportation systems are described in detail in the programmatic environmental impact statement BLM prepared on timber management in the western United States (USDI, BLM 1975), hereafter referred to as the BLM Timber Management FEIS.

Timber Harvest

The primary timber harvest method to be employed during the next 10-year period would be clearcutting. An estimated 44 percent of the proposed final harvest by clearcutting (See Table 1-1 for proposed acreages by alternatives) would be accomplished by high lead cable yarding systems. Another 53 percent would be accomplished by cable yarding systems specifically providing partial log suspension and 1 percent by providing full log suspension. The

remaining 2 percent would be harvested by tractor skidding. This variety of logging systems is a design feature employed primarily for watershed protection and reduced soil damage. Refer to the BLM Timber Management FEIS for a detailed description of logging systems.

Single tree selection would be employed for harvest of dead and dying timber (mortality salvage) in stands not scheduled for harvest within the 10-year period. Mortality salvage would take place on lands in the intensive timber production base and on all other lands in the event of a major catastrophic event or when beneficial to wildlife or fish. The variance in acreages proposed for mortality salvage (Table 1-1) reflects the differences in over-mature timber available under each alternative.

Commercial thinning (see Glossary) would be applied to intensively managed timber stands between the ages of 30 and 70 years. The interval of treatment (ranging from 10 to 30 years) would vary according to site characterization with poor sites having longer intervals. Acreages of commercial thinning by alternative are presented in Table 1-1.

Site Preparation

Site preparation procedures are used to prepare newly harvested and inadequately stocked areas for the planting of a new crop of trees. Four types of site preparation treatments (broadcast burning, herbicides, mechanical and manual) would be utilized (see Table 1-1).

Broadcast burning is the primary method of site preparation proposed under each alternative. Some variables (Wright and Bailey 1982) that

Table 1-2 Estimated Ten-Year Use of Herbicides

Chemical	Method	Season	Carrier	Target Species	Application Rate ¹ (lbs./acre)	Estimated Acres									
						Alt 1 Max/EFD	Alt. 2 Max.Tbr.	Alt 3 Def.Har.	Alt. 4 S.S.D.	Alt. 5 E-W Cor.	Alt. 6 No Action	Alt. 7 O.P.A.*	Alt. 9 Eco.	Alt. 10 Full Eco.	
SITE PREPARATION															
Atrazine-Dalapon	Aerial & ground	Spring	Water	Annual & perennial grasses	4 lbs. ea.	3,763	3,631	3,559	3,464	3,350	3,047	3,194	1,890	1,379	
2,4-D	Aerial	Spring	Water & oil	Ceanothus, red alder	3 lbs.	565	545	535	520	500	458	480	284	207	
Garlon	Aerial & ground	Spring-Fall	Water & oil	Vine maple, red alder, ceanothus, big leaf maple	1-3 lbs.	1,237	1,193	1,169	1,138	1,100	1,001	1,049	621	453	
Roundup	Aerial & ground	Spring-Fall	Water	Grasses, vine maple, salmonberry	1-3 lbs.	2,535	2,446	2,398	2,334	2,250	2,053	2,152	1,273	929	
Tordon	Ground	Year-round	None	Red alder, big leaf maple	0.5 lbs.	283	273	267	260	250	229	240	142	104	
Asulox	Aerial	Fall	Water	Bracken fern	1.5 lbs.	450	435	426	415	400	365	382	226	165	
Plantation Maintenance & Release															
Atrazine-Dalapon	Aerial & ground	Spring	Water	Annual & perennial grasses	4 lbs ea.	1,078	1,040	1,020	993	950	873	915	541	395	
2,4-D	Ground	Spring	Water	Ceanothus, red alder	2 lbs.	9,127	8,807	8,632	8,401	8,150	7,391	7,745	4,584	3,345	
Garlon	Aerial & ground	Spring-Fall	Water & oil	Vine maple, red alder ceanothus, big leaf maple, hazel	1.5 lbs.	12,900	12,448	12,201	11,875	11,500	10,447	10,949	6,479	4,728	
Roundup	Aerial & ground	Spring-Fall	Water & oil	Grasses, vine maple, salmonberry, hazel	1.5 lbs.	13,709	13,229	12,966	12,619	12,250	11,102	11,635	6,885	5,025	
Tordon	Ground	Year-round	None	Red alder, big leaf maple	0.5 lbs.	462	446	437	425	400	374	392	232	169	
Krenite	Aerial	Fall	Water	Vine maple, hazel	3 lbs.	116	112	109	106	100	93	98	58	42	
Asulox	Aerial	Fall	Water	Bracken fern	1.5 lbs.	347	334	327	319	300	281	294	174	127	
Velpar	Aerial & ground	Spring	Water	Grasses	2 lbs.	539	520	510	496	500	437	458	271	198	
Dicamba	Ground	Year-round	Oil	Bigleaf maple	2 lbs.	231	223	218	213	200	187	196	116	85	

¹ Active ingredients (in total pounds) applied may be figured by multiplying the application rate by the estimated acres under each alternative.

* Alternative 8 does not employ the use of herbicides.

associate slash burning with regeneration include the type and amount of slash, remaining vegetation and air quality limitation. Burning would occur at times approved by the Oregon State Department of Forestry which administers the Smoke Management portion of the State's Air Quality Implementation Plan. Acreage, including those receiving slash disposal by broadcast burning (Table 1-1), may receive one or more of the following site preparation treatments.

Site preparation treatment using herbicides (Table 1-2) is included in all alternatives except Alternative 8. Herbicides are used to increase plantation survival rate by control of grasses, forbs, brush and noncommercial tree species. These treatments improve the potential for success by reducing competition for light, moisture and soil nutrients during the tree seedling establishment period. Application and monitoring of herbicides would be in accordance with BLM's FEIS Vegetation Management with Herbicides: Western Oregon 1978 through 1987. See the following Plantation Maintenance and Release section for more detail.

Manual site preparation consisting of brush pulling or cutting or hand piling of slash for burning would occur on some acreage during the next decade (Table 1-1).

Mechanical site preparation would consist of scarification and piling or windrowing of slash, brush and unmerchantable stems. Bulldozers equipped with a brush blade would normally be used. However, using this type of equipment would be restricted to areas with suitable soil types, slopes less than 35 percent, and accomplished during periods of low soil moisture. Small cable yard equipment could be used on slopes greater than 35 percent.

Planting

To achieve adequate reforestation within 5 years following harvest on timber production lands, harvested areas would be planted with commercial coniferous species (Douglas-fir, western hemlock and western redcedar) within approximately 1 year of the completion of harvesting. Planting stock is nursery grown from seed collected on sites and at elevations similar to the specific project area. Genetically improved stock is also being nursery grown and would be scheduled for planting on 15,514 acres under all alternatives except Alternative 10. The broad selection of parent trees for genetically improved stock is intended to maintain genetic diversity (BLM Instruction Memorandum OR 79-334).

Reforestation experience in the SYUs shows that target stocking levels of 245 to 320 well-spaced trees per acre depending on site class cannot always be achieved by the initial planting. Post-treatment surveys would be conducted to

determine the rate of survival and when replanting or interplanting would be required to meet stocking standards.

Plantation Protection

Estimated acreages that would require some type of protective treatment are shown in Table 1-1. Treatments would include protection from the sun by shading and protection from damage by deer, elk, mountain beaver or other small animals by placing plastic tubing or netting over seedlings or by bud capping. Mountain beaver would be trapped when they occur in significant numbers in a plantation. The number of acres requiring each of these treatments would be determined annually in conjunction with normal reforestation surveys.

Plantation Maintenance and Release

Maintenance treatments promote the survival and establishment of coniferous seedlings. Release treatments reduce competition for light, moisture and nutrients between shrubs or grass and existing commercial coniferous seedlings and promote dominance and growth of established coniferous trees.

Fast-growing hardwoods, such as red alder or vine maple, overtop and suppress slow-starting conifer seedlings. The degree and type of competition varies with the individual site. On dry sites, grasses, forbs and shrubs are strong competitors for water, while elsewhere hardwoods grow rapidly enough to shut out essential light and compete for water during the dry summer. With reduced competition, the conifers rapidly grow beyond the point where they can be overtopped and further suppressed by surrounding vegetation. When this growth situation is achieved (approximately 3 to 10 years from planting), there would be no further control of competing vegetation necessary.

In recent years, herbicides have been used effectively to inhibit the growth of competing vegetation, thus increasing available water, nutrients and light for suppressed conifers. Herbicides are applied aerially or by several ground methods. The method selected is dependent on costs, topography, limits of the equipment, kind and dispersion of target plants, potential environmental impacts and biological conditions. Most of the herbicides proposed for use in the Eugene SYUs would be applied by helicopters equipped with systems designed to limit herbicide application to the target areas. Helicopter application would be accomplished under contract through the competitive bidding process.

Timing of herbicide treatment is stringently controlled in relation to specified weather conditions such as temperature, humidity and wind. There is full authority for ordering cessation

of operations based on adverse field conditions. Both equipment and operators are frequently checked by field project supervisors. Only registered chemicals would be used and in accordance with labeled instructions on the container. Handling, storage and application of chemicals would be in accordance with the Oregon Forest Practices Rules (See the Interrelationships section, State and Local Government).

Continuous administration of spraying contracts in progress is required. Water samples of some adjacent streams are taken prior to spraying, to establish baseline quality, and at specified intervals thereafter.

The use of herbicides for maintenance and release is included in all alternatives except for Alternative 8. Table 1-2 shows the chemicals, target species and estimated acreage of herbicide use as proposed during the 10-year period. Alternative 8, which does not incorporate herbicide use, employs manual methods for release of 5,770 acres. All other alternatives would employ manual methods on approximately 11 percent of the acres treated during the proposal period (see Table 1-1). Manual methods would consist of clearing around selected commercial tree species using hand tools.

Each area proposed for maintenance or release treatment would undergo a site-specific environmental assessment. During this analysis, alternative methods of vegetation control are considered including chemical, manual and mechanical means. Assessments addressing specific herbicide projects are prepared and tiered under BLM's FEIS Vegetation Management with Herbicides: Western Oregon - 1978 through 1987. Protective stream buffers (determined according to stream classification and herbicide used) and monitoring of herbicide application are as described in the FEIS mentioned above.

Precommercial Thinning

Precommercial thinning would be applied to timber stands between 10 and 15 years of age that contain over 500 stems per acre. This treatment concentrates available nutrients, moisture and light into those trees which would be the eventual crop for future harvest.

The number of trees cut per acre during precommercial thinning is dependent on the density of the stand before thinning. While average spacing of crop trees would be approximately 12 feet, the number left may vary between 245 and 320 per acre. Contract specifications, emphasized by field instructions to crews, cover desired spacing of crop trees and criteria for crop tree selection.

Fertilization

Areas precommercially and commercially thinned and portions of areas where stocking control is achieved through plantation spacing would be fertilized where effective (Table 1-1). Continuing studies and analysis will be conducted to determine fertilizer response and economic effectiveness of planned projects. The average application is expected to be 200 pounds of nitrogen per acre beginning when the stand is precommercially thinned and at 10-year intervals thereafter until 10 years before final harvest. In addition to acceleration of growth for up to 7 years following treatment, fertilization tends to reduce shock associated with thinning.

Wildlife Mitigation

The types and levels of forest management treatments described above can be modified to provide certain wildlife habitat structures on the intensive timber production base, and to complement land use allocations for wildlife and other resources.

Measures to mitigate impacts to wildlife habitat would be applied to varying degrees in Alternatives 3, 5, 7, 8, 9 and 10.

On intensive timber production land totaling 20 percent of the district, forest management treatments would be designed to provide snags, down logs and unthinned developing stands in Alternatives 3, 5, 7 and 8 (see Chapter 2, Wildlife for a discussion of habitat structure). Within this area, an average of three snags or green trees of low commercial value would be left per acre. Each retained tree would measure at least 20" by 40'. In the event these trees were blown down, they would be left to serve as down log habitat, except where mortality salvage is needed to protect the site. Also within this portion of the intensive timber base, at least one 25-acre site per section would be left unthinned through rotation. Targeted densities would be 500 or more trees per acre at age 30. Measures to retain snags would also apply to one-half the transition zone of riparian zones withdrawn from the intensive timber base (see Appendix C, Table C-3). These transition zones total about 3,500 acres in the Eugene District.

Management to retain some residual understory trees and down logs would apply to the entire timber production base in Alternatives 3, 5, 7 and 8. Timber sale contracts would exclude requirements for gross yarding, except where needed to establish an acceptable level of conifer stocking. Contracts would also allow understory vegetation to remain, except where removal is required for effective site preparation.

Additional measures to mitigate impacts to wildlife habitat on the intensive timber base in these alternatives would require minor and usually

Table 1-3 Summary of Impacts

Environmental Components Impacted	Units of Measure	Existing Situation	Alt. 1 Max/EFD	Alt. 2 Max. Tbr.	Alt. 3 Def. Har.	Alt. 4 S.S.D.	Alt. 5 E-W Cor.	Alt. 6 No Action	Alt. 7 O.P.A.	Alt. 8 No Herb.	Alt. 9 Eco.	Alt. 10 Full Eco.	Remarks
Air Quality													
Nitrous oxides	tons/year	N/A	161	155	152	148	145	130	136	121	80	59	
Hydrocarbons	tons/year	N/A	1,004	969	950	924	906	813	852	759	504	368	
Particulates	tons/year	N/A	1,687	1,628	1,596	1,553	1,521	1,366	1,432	1,275	847	618	
Soils													
Lost productivity	acres/decade	N/A	4,470	4,387	4,266	4,250	4,055	4,020	4,043	3,823	3,310	2,491	
Water Resources													
Sediment yield	tons x 100/decade	876	989	973	883	875	838	873	843	690	640	491	
Vegetation													
Acres denuded by Road construction	acres/decade	3,249	2,107	2,107	2,031	2,015	1,921	2,002	2,031	2,031	2,103	1,626	
Plant habitat altered by Timber harvesting	acres/decade		59,546	57,982	56,498	56,215	54,024	88,448	52,448	48,264	36,153	20,529	
Herbicide use	acres/decade		47,342	45,682	44,774	43,578	42,200	38,338	40,179	0	23,776	17,351	
Wildlife Habitat													
Habitat modified	acres/decade	N/A	75,700	74,200	72,100	71,200	70,500	109,300	68,500	64,300	46,300	27,800	Roads, harvest and thinning.
Early successional stage habitat, end 1st decade ¹	acres quality	64,400 M	77,000 L	75,400 L	74,600 L-M	73,500 L	72,400 L-M	70,400 L	70,300 L-M	67,000 L-M	54,900 H	49,100 H	Habitat <15 years old.
Early successional stage habitat, end 10th decade	acres quality	64,400 M	53,700 L	51,200 L	53,075 L-M	49,700 L	47,400 L-M	70,800 L	33,752 L-M	89,900 L-M	21,200 H	10,900 H	Habitat <15 years old.
Old growth habitat, end 1st decade ¹	acres quality	48,400 M	25,500 L	26,300 L	26,800 M	27,400 L	27,700 L	0 N/A	28,900 M	30,600 L	35,600 H	48,400 H	Habitat 196 years and older.
Old growth habitat, end 10th decade	acres quality	48,400 M	8,900 L	8,900 L	12,100 L	16,400 L	17,000 L	0 N/A	22,300 M	20,400 L	46,200 H	57,000 H	Habitat 196 years and older.
Roosevelt Elk habitat, end of 1st decade	Percent change from existing	N/A	-40%	-40%	-35	-35%	-30%	-45%	-20%	-25%	+5%	+10%	Plus or minus 5 percent.
Roosevelt Elk habitat, end of 10th decade	Percent change from existing	N/A	-60%	-60%	-40/-60% ¹	60%	-45%	-75%	-40%	-30%	0	+10%	Plus or minus 5 percent.
Wildlife population													
N. Spotted Owl, end of 10th decade	Pairs	36	0	0	19/0 ¹	1	12	0	19	12	41	54	300 acre old growth management recommendation.
N. Spotted Owl, end of 10th decade	Pairs	27	0	0	12/0 ¹	1	8	0	12	8	27	41	1,000 acre old growth management recommendation.
Coldwater fish population 1st decade	Percent change from existing	N/A	-10%	-10%	+10%	+10%	+10%	+10%	+10%	+10%	+20%	+20%	
Coldwater fish population 10th decade	Percent change from existing	N/A	-30%	-30%	+25%/-30	+25%	+25%	+10%	+25%	+25%	+50%	+50%	
Recreation	Ability to meet needs	—	-	-	+	+	+	-	+	+	+	+	
Cultural Resources	Inadvertent degradation (undiscovered sites)	—	-L	-L	-L	-L	-L	-L	-L	-L	-L	-L	Based on comparison of harvest levels.
Visual Resources	Degradation of scenic quality	—	-H	-H	-M	-M	-M	-H	-M	-M	+L	+L	
Areas of Critical Environmental Concern	Degradation of resource values	—	-L	-L	0	0	0	-L	0	0	0	0	
Special Areas	Site degradation	—	-L	-L	0	0	0	-L	0	0	0	0	
Socioeconomic²													
Impacts Compared to Existing Condition													
Total earnings	\$ millions	75.3	+24.5	+21.3	+18.7	+17.0	+14.3	+12.7	+10.3	+1.2	-21.4	-46.1	
Total employment	jobs	4,242	+1,345	+1,169	+1,044	+952	+802	+714	+582	+77	-1,167	-2,230	
Public revenue	\$ millions	22.82	-0.44	-1.16	-1.79	-2.14	-2.77	-3.13	-3.67	-5.74	-10.86	-16.44	Based on stumpage @ \$92.7/MBF
	\$ millions	22.82	40.49	38.45	36.67	35.66	33.88	32.86	31.34	25.49	10.99	-4.77	Based on stumpage @ \$262/MBF
Impacts Compared to No Action Condition ³													
Total earnings	\$ millions	88.0	+11.7	+8.6	+6.0	+4.4	+1.6	0	-2.4	-11.5	-34.2	-58.8	
Total employment	jobs	4,940	+885	+459	+330	+242	+88	0	-132	-637	-1,881	-3,224	
Public Revenue	\$ millions	19.69	2.69	1.98	1.35	.99	.36	0	-0.54	-2.61	-7.73	-13.30	Based on stumpage @ \$92.7/MBF
	\$ millions	55.68	7.63	5.59	3.81	2.80	1.02	0	-1.54	-7.37	-21.87	-37.63	Based on stumpage @ \$262/MBF

¹ Refer to Chapter 3, Tables 3-7A & B² See Chapter 3 for discussion of dual impact measures.³ Impacts measured from No Action Condition (Alternative 6).⁴ Long-term impacts are analyzed for two differing assumptions: Deferred acres not harvested after 1st decade/Deferred acres harvested after 1st decade. See Footnote 1, Table 3-11.

+ Beneficial - Negative L Low M Medium H High

localized adjustments of forest management activities. Among these measures are visual screens and road closures in sensitive wildlife areas and protection of the nest sites of blue heron and other important bird species.

The mitigating measures proposed for Alternatives 3, 5, 7 and 8 are reduced in intensity and geographical extent from a full range of wildlife habitat management opportunities developed for Alternatives 9 and 10.

Additional, partial mitigation for habitat on the intensive timber production base in these alternatives would be applied on the constrained timber production base and on lands excluded from timber production because of fragile soils or reforestation problems.

Comparison of Impacts

This section compares in tabular form (Table 1-3) the impacts of each alternative including the preferred alternative (Alternative 5). While impacts have been described in detail in Chapter 3, Table 1-3 is presented to assist decisionmakers and reviewers by summarizing the impacts of each alternative.

Implementation Final Decisions

Following the comment period on the final EIS, the District Manager will review the public comments on both draft and final EISs and prepare a Record of Decision. The recommended decision may be to select one of the EIS alternatives intact, or to blend features from the alternatives analyzed in the FEIS. Significant conflicts, alternatives, environmental preferences, economic, technical and policy considerations will be addressed in the Record of Decision, which is expected later in 1983.

Monitoring and Studies

BLM land management programs are monitored in various ways. Currently, forest management practices are monitored primarily through administration of contracts under which most actions are authorized. Timber sale contracts are inspected at least once a week, when active, and more often if sensitive operations are in progress. Daily administrative visits are not uncommon when harvest is moving at a fast pace, slash disposal is occurring, or road construction involving critical aspects (such as stream crossing structures) is taking place. Service contracts, i.e., tree planting, precommercial thinning, tubing, manual brush cutting and fertilization, are monitored at regular intervals to determine the quality and quantity of completed work. Visits to these operations range from twice a week to the full-time presence of a Bureau contract administrator, depending on the experience of the contractor and rate of progress.

Daily visits usually occur when there is reason to believe that the operator will require help in the interpretation of contract requirements.

Silvicultural treatment success is monitored through a series of inventories and surveys performed at various times during the stand's life. Appropriate stocking surveys are performed both prior to and after a treatment is accomplished. Information from these surveys identifies the need for or success of a particular silvicultural treatment. This information is documented and maintained in the operations and reforestation records systems. In addition, plans are in progress to measure actual growth responses from thinning programs in the SYUs.

Water quality monitoring would be carried out in accordance with Executive Orders 11514 (partially amended by 11991) and 12088, Sections 208 and 313 of the Clean Water Act (PL 95-217, PL 92-500 as amended), BLM Manual 7240 and Oregon Department of Environmental Quality Memorandum of Understanding (MOU-OR 158). Standard analytical methods would be followed.

Monitoring for other resource management programs (wildlife habitat, visual, cultural and recreational) would be outlined in the Record of Decision.

Requirements for Further Environmental Analysis

This environmental impact statement may best be described as a regional programmatic statement for the proposed 10-year timber management plan and is considered applicable for the decade. Site-specific environmental analysis and documentation (including categorical exclusion where appropriate) will be accomplished for each type of treatment under consideration. Interdisciplinary impact analysis will be tiered within the framework of this and other applicable environmental impact statements.

An environmental assessment of a timber sale (or group of sales) will address the effects of the harvest method, yarding system, road construction or reconstruction, slash disposal and any other treatments conducted under the terms of a timber sale contract. Environmental analysis of forest development projects such as precommercial thinning, animal damage control, fertilization and herbicide applications will also be accomplished. With problems and conflicts identified through analysis, it is possible to design the proposed project in an environmentally sensitive manner. Where the action is to be accomplished by a contractor, the environmental assessment is a primary means for determining appropriate contract stipulations. Projects to be accomplished by BLM personnel are conducted in accordance with the findings of the analysis and decision documents.

If an environmental assessment indicates potential for significant impacts not already described in an existing EIS, an environmental impact statement or a supplement to an existing EIS may be required.

Interrelationships

Much of northwest Oregon is timber-producing land. In addition to the BLM, jurisdictions include the U.S. Forest Service, State of Oregon, the counties, and private companies and individuals. Each entity approaches management of timber lands differently, although some periodically prepare internal or public plans for their management.

Federal Agencies

The Eugene SYUs share in part a common boundary with the Siuslaw and Willamette National Forests. Coordination between the BLM District Manager and the Forest Supervisors is routine. Specific project and program coordination takes place as needed between all management levels of each agency and also between resource specialists. A cooperative agreement provides for interagency road construction, use and fire protection.

The U.S. Army Corps of Engineers has the authority, under Section 404 of the Clean Water Act of 1977 (P.L. 95-217), to regulate the discharge of dredged or fill materials into any estuary, wetland or streams of the United States with flow in excess of 5 cubic feet per second. Normal silvicultural practices are exempt from this regulation. Based on the adequacy of BLM environmental protection practices, the Corps has issued BLM a general permit for all such activities. Under the permit, BLM provides the Corps, the State Division of Lands and certain environmental review agencies with advance notice of specific proposed projects. Larger projects exceeding limits in the general permit require a separate permit.

The U.S. Fish and Wildlife Service administers the Endangered Species Act of 1973 (as amended). Accordingly, BLM consults with that agency when it is determined that a threatened or endangered species or its critical habitat may be affected. The purpose of consultation is to obtain a formal biological opinion on the appropriate course of action. The outcome of such consultation may mean modification or abandonment of the action.

The National Marine Fisheries Service (NMFS) is responsible for oversight and evaluation of activities which may affect marine, estuarine, and anadromous fishery resources. NMFS participates in comprehensive land and water use planning under the terms of the Water Resources Planning Act, the Coastal Zone Management Act, and the National Environmental Policy Act and makes recommendations for maintenance or

enhancement of anadromous fishery resources under the terms of the Fish and Wildlife Coordination Act.

The Soil Conservation Service (SCS) is responsible for all aspects of the National Cooperative Soil Survey. Accordingly, BLM has a cooperative agreement with SCS that provides for the development and utilization of soil surveys on lands that are of interest to the Bureau. The soil survey data will provide a basis for efficient interpretations for the Bureau planning and management systems.

The National Park Service (NPS) administers the Nationwide Rivers Inventory, as provided under the National Wild and Scenic Rivers Act of 1968. Present efforts are directed toward inventory and evaluation to determine which free-flowing rivers and river segments are suitable for possible designation as components of the National Wild and Scenic Rivers System. BLM consultation with NPS is required if proposed management actions could alter a river's ability to meet established Wild and Scenic Rivers Act eligibility and/or classification criteria.

State and Local Governments

Section 202(c) of the Federal Land Policy and Management Act requires BLM to coordinate its planning efforts with those of State and local governments; assist in resolving inconsistencies in our mutual planning efforts; provide for State and local governmental involvement in development of BLM land use programs, regulations and land use decisions; and develop BLM resource management plans and programs consistent with those of State and local government to the extent that such BLM plans and programs are also consistent with Federal law and regulations. BLM coordination efforts involve a number of State and local administrative and planning agencies as highlighted below.

The Intergovernmental Relations Division for the State of Oregon is the clearinghouse for the various State agencies. Notice of all BLM planning and major proposed actions are provided for coordinated State level review by the State Clearinghouse. The Regional Councils of Government serve as the clearinghouse for coordinated review of proposed BLM activities by county and local governments in their respective areas of interest. BLM involvement with the four counties in the SYUs is largely via the several boards of county commissioners. Through these bodies, county governments participate in planning for land use, road construction and recreational developments on public lands administered by BLM.

The Oregon Land Conservation and Development Commission (LCDC) administers the State comprehensive land use planning program as

provided in Oregon State Statutes, (ORS 197). In this program, county and local governments are required to develop comprehensive land use plans and implementing ordinances consistent with 15 statewide planning goals and guidelines. These call for a balance between conservation and development to best meet public needs.

LCDC is the primary State agency responsible for implementing the Oregon Coastal Management Program established under P.L. 94-370, the Coastal Zone Management Act (CZMA) of 1972, as amended (.S.C. 1451 et seq.). This program relies initially on county and local comprehensive planning under ORS 197 with special emphasis on unique characteristics of coastal resources. In addition to the 15 statewide goals for planning consideration, coastal planning is guided by four special State Coastal Goals and Guides: Estuarine Resources, Coastal Shorelands, Beaches, and Dunes and Ocean Resources.

CZMA requires Federal activities to be consistent to the maximum extent practicable with the Oregon Coastal program. Although Federal lands are specifically excluded from the coastal zone, such BLM activities as would directly affect coastal resources outside the BLM lands require BLM consistency statements. These statements are made through the A-95 Clearinghouse notification and review process. All alternatives are expected to be consistent with the CZMA. A detailed consistency determination for the preferred alternative is being sent to the Oregon Department of Land Conservation and Development.

Close relations have been established with LCDC to ensure cooperation and coordination of BLM programs and planning efforts with those conducted by county and local governments under ORS 197 and CZMA. The relationship of the Eugene alternatives to the LCDC Statewide and Coastal Goals is shown on Table 1-4. Discussion comments on this table generally focus attention on deficiencies in addressing the listed goals.

Throughout the planning process, BLM has worked with Lane County to achieve consistency with local plans. Methods of involving local governments have included: (1) frequent informal contacts to discuss local planning concerns; (2) invitations to participate in public tours, workshops and meetings; and (3) discussions with the Lane County planning department to determine consistency of BLM's preferred land use plan with acknowledged local plans.

The Comprehensive Land Use Plan for Lane County was adopted by the Lane County Board of Commissioners in 1980 and is awaiting acknowledgement (acceptance) by LCDC. To meet the decision factor regarding consistency with State and local land use plans, the preferred alternative was developed to be consistent with the

recently adopted Comprehensive Land Use Plan of Lane County.

Linn, Benton and Douglas Counties also contain lands in the Eugene SYUs. On December 14, 1982, the LCDC acknowledged, except for Goal 5 habitat areas, the Comprehensive Plan for Douglas County. Benton County's Plan is under a continuance order for Goals 1, 3, 4 and 5, as is Linn County's Plan for Goals 2-6, 12 and 15. Continuance orders are offered to local governments which have made substantial headway toward acknowledgement, but which have a few remaining goal deficiencies.

Upon release of the draft EIS, appropriate counties were asked to determine the consistency of timber management alternatives with adopted plans.

The Oregon State Forester, by means of the Forest Practices Act of 1972, regulates timber harvest operation and supportive practices on all non-Federal lands within the SYUs. Minimum standards are prescribed relating to the following forest practices:

- Timber harvest.
- Reforestation of economically suitable lands.
- Road construction and maintenance on forest land.
- Chemical applications.
- Slash disposal.
- Maintenance of streamside buffers.

Although Federal agencies are not bound by State forest practice rules, Bureau minimum standards meet or exceed State rules. The BLM and USFS, acting jointly, have entered into a Memorandum of Understanding (MOU) with the State Forester in this regard.

BLM is a cooperator in the statewide Smoke Management Plan administered by the Oregon State Forester in order to comply with the Clean Air Act of 1963 (as amended). The primary objective of the plan is to keep smoke from prescribed burning operations away from population centers and other smoke sensitive areas (OAR Chapter 629-43-043). Slash burning is allowed to begin only when smoke dispersion conditions are determined by Oregon State Department of Forestry (OSDF) to be favorable.

OSDF is the primary contractor for fire protection of public lands administered by BLM in the SYUs. That department undertakes presuppression and suppression actions for all lands in the area.

Table 1-4 Relationship of Eugene EIS Alternatives to LCDC Statewide and Coastal Goals 1

LCDC Statewide Goal Number and Description	Discussion ²
1. To insure citizen involvement in all phases of the planning process.	BLM land use planning process provides for public input at every stage--from assistance in the initial inventory to the identification of management opportunities, the development of alternatives, the environmental analysis and the final decision.
2. To establish a land use process and policy framework as a basis for all decisions and actions.	The proposed action and all alternatives have been developed in accordance with the land use planning process authorized by the Federal Land Policy and Management Act of 1976 which provides a policy framework for all decisions and actions.
4. To conserve forest lands for forest uses.	The planning area is predominantly forest land. The proposed action and alternatives all provide retention of inventoried forestlands for forest uses. No alternative exceeds the productive capacity of the land base and all proposed uses are compatible with forest uses in this goal.
5. To conserve open space and protect natural and scenic resources.	All alternatives conserve open space. All alternatives except 1 and 2 protect scenic resources to some degree.
6. To maintain and improve the quality of the air, water and land resources.	Only Alternatives 1 and 2 do not fully address necessary enhancement of land and water quality for multiple use of forest lands or for meeting Federal and State minimum water quality standards. Slash burning will increase smoke (See Table 3-1). All alternatives would comply with the statewide smoke management plan.
7. To protect life and property from natural disasters and hazards.	All alternatives include identification of potential hazard areas and general BLM program and operational measures for protection of life and property from natural disasters and hazards.

¹ LCDC goals not generally applicable to the proposal and alternatives are: 3. Agricultural Lands; 10. Housing; 11. Public Facilities and Services; 14. Urbanization; 15. Willamette Greenway; 17. Coastal Shorelands; and 18. Beaches.

² See Chapter 3 and Table 1-3 for impacts of the alternatives on the various resources. Also see the Index and Table of Contents for specific page numbers to specific resources.

LCDC Statewide Goal Number and Description	Discussion²
8. To satisfy the recreational needs of the citizens of the State and visitors.	Alternatives 1, 2, and 6 would best meet demands for increasing motorized vehicle accessibility to the recreation base lands but would fail to adequately meet increasing demands for recreational activity opportunity areas. Alternatives 3, 4, 5, 7, 8, 9 and 10 would provide opportunity areas to meet recreation needs. Under all alternatives, BLM would actively coordinate outdoor recreation efforts with other agencies.
9. To diversify and improve the economy of the State.	Alternatives 1 through 5 would increase timber production for greater economic returns, but diminish opportunities for diversity. Alternatives 7 through 10 provided diversity but would result in decreases in total economic returns.
12. To provide and encourage a safe, convenient and economic transportation system.	The forest transportation system will be expanded and improved.
13. To conserve energy.	Conservation and efficient use of energy sources are objectives in all BLM activities. Use of cull logs and slash for chips and firewood is encouraged.
16. To recognize and protect estuarine resources.	All alternatives recognize and protect estuarine resources. Alternative 1 would cause the greatest amount of sediment and Alternative 10 the least.
19. To conserve the long-term values, benefits and natural resources of the near shore ocean and Continental Shelf.	BLM programs for protection and enhancement of anadromous fisheries would relate to this goal. As discussed above for Goal 6, Alternatives 1 and 2 make the least provision for protection and enhancement of upstream fisheries habitat.

Table 1-5 Consistency of the Eugene Alternatives with Basic Objectives of the Forestry Program for Oregon ¹

Basic Objective	Proposed Action and Alternatives			Discussion
	Consistent	Minimally Consistent	Inconsistent	
To maintain the maximum commercial forest land base consistent with other resource uses while assuring environmental quality.	1,2,4,6	3	5,7,8,9,10	The benchmark (286,039 acres) for consistency is the commercial forest land base minus withdrawn TPCC lands. Environmental quality would be protected to the degree specified in the Oregon Forest Practices Act.
To maintain or increase the allowable annual harvest levels to its fullest potential to offset potential socioeconomic impacts.	1,2,3,4,5,6	7	8,9,10	The benchmark for consistency is the current allowable cut volume of 219 MM bd.ft. per year. The level of cutting the land base can sustain is dependent on number of acres allocated to timber production, level of management the land base receives and productivity of the land.
To identify and implement the levels of intensive forest management required to achieve maximum growth and harvest.	1,2,3,4,5,7	6	8,9,10	BLM currently implements a full range of intensive timber management practices for optimizing timber production. New and improved practices would be implemented consistent with technological advances.
To maintain community stability by remaining flexible for increases in future harvest levels that would offset projected shortages.		1	2,3,4,5,6,7,8,9,10	The benchmark for consistency is the Eugene District cooperative harvest target of 273 MM bd.ft./Yr. ² as determined by OSDF. Flexibility in harvest levels would be achieved by Alternative 1, which includes a deviation from even flow.

¹ Arrived at through consultation with Oregon State Department of Forestry (OSDF)

² Oregon State Forestry Department, 1980.

Table 1-6 Consistency of the Alternatives with State of Oregon Wildlife Goals ¹

Goal	Consistent	Minimally Consistent	Inconsistent	Discussion
To maintain all species of wildlife at optimum levels and prevent the serious depletion of any indigenous species.	9 and 10	3, ² , 5, 7, 8	1,2,4,6	The ecosystem management concept and protection of riparian zones in all stream orders in Alternatives 9 and 10 would provide for optimum levels of all indigenous species. Retention of older forests in selected areas, protection of riparian zones on 3rd order and larger streams, and mitigating measures would at least retain remnant dispersed occurrences of all species in Alternatives 3, 5, 7 and 8. Populations of many non-old growth related species would be retained at optimum levels. It is the intent of Alternative 5 to contribute to the viability of old-growth-dependent species. The lack of allocations for older forests in Alternatives 1, 2 and 6 and lack of adequate mitigating measures in Alternatives 1, 2, 4 and 6 would make these alternatives less than optimum for many species and inconsistent with this goal.
To develop and manage the lands and waters of the State in a manner that will enhance the production and public enjoyment of wildlife.	9 and 10	3, ² , 5, 7, 8	1, 2, 4, 6	The ecosystem concept and controlled harvest of all riparian zones would make Alternatives 9 and 10 consistent with this goal. Under Alternatives 3, 5, 7 and 8, smaller and fewer habitat areas would be allocated for enhancement opportunities. Alternatives 1, 2 and 6 would protect very few older forests habitat areas. Alternative 4 contains few mitigating measures for wildlife.
To develop and maintain public access to the lands and waters of the State and the wildlife resources thereon.	All	None	None	An extensive network of roads would be retained under all alternatives

¹ The consistency of the alternatives with the State of Oregon wildlife goals was also reviewed by the Oregon Department of Fish and Wildlife (ODFW). The ODFW evaluation (see Appendix F) rated all alternatives except 9 and 10 inconsistent with goals 1 and 2.

² This assessment assumes the deferred harvest acreage in this alternative would be withdrawn from intensive base after the first decade.

The Forestry Program for Oregon (Oregon State Board of Forestry 1977) outlines basic objectives of the Oregon State Board of Forestry for timber land management within the State. The relationship of the proposed action and alternatives to these basic objectives is shown in Table 1-5.

Management of resident wildlife, including fish, within the SYUs is the responsibility of the Oregon Department of Fish and Wildlife. BLM, in managing lands under its jurisdiction, considers wildlife habitat as a resource category. The Sikes Act (PL 93-452), as amended, is the primary tool guiding coordination between BLM and the Oregon Department of Fish and Wildlife. Cooperative agreements and memorandums of understanding describe the responsibilities of the two agencies. Table 1-6 analyzes the consistency of the alternatives with State of Oregon wildlife goals.

The Oregon Department of Environmental Quality (ODEQ) has lead responsibility for statewide water quality management planning in accordance with Section 208 of P.L. 92-500 (Federal Water Pollution Control Act) as amended by P.L. 95-217 (Clean Water Act). BLM and ODEQ have entered into a Memorandum of Understanding (MOU) which outlines their respective roles in meeting State water quality objectives. The MOU assures close interagency cooperation, development and implementation of appropriate practices and control measures to comply with the Clean Water Act, and compliance with State requirements. BLM forest management practices meet or exceed objectives of the statewide water quality management plan.

CHAPTER 2

AFFECTED ENVIRONMENT



This chapter addresses the environment as it exists today within the Eugene Sustained Yield Units (SYUs). In the SYUs there are approximately 317,000 acres of BLM-managed lands, of which 307,900 acres are forested. Timber harvest has been ongoing for several decades, and the environment described exhibits the effects of human use.

Chapter 2 provides a basis on which impacts of all the alternatives may be assessed. Data and analysis will be commensurate with the importance of the impact, with less important material summarized, consolidated or simply referenced.

In preparation of this chapter, the primary data sources are documents of the Bureau planning system developed by the Eugene District. The Unit Resource Analysis (URA), Planning Area Analysis (PAA) and proposed Management Framework Plan (MFP) for the Eugene area are available for review at the Eugene District Office of BLM in Eugene, Oregon.

Other references supplementary to or updating planning system data are cited within the body of the text by author and date of publication. A listing of these references appears in the References Cited.

Climate and Air Quality

The area has a temperate marine climate with warm summers and mild, wet winters. In Eugene, the mean maximum temperature is 82°F, the mean minimum is 31°F. The record high was 108°F in 1981 and the record low was -12°F in 1972.

Monthly precipitation, mostly as rain, ranges from a high of 20.99 inches in December 1964 to no rainfall during July and August (1933). Average precipitation is about 50 inches annually in the Eugene SYUs. The frost-free growing season averages about 160 days from May through October.

Air movement patterns are predominantly from the north in summer and southerly during the late fall and early winter months. Occasionally during the winter months, strong southwesterly winds exceeding 50 miles per hour occur in the Eugene SYUs.

During the summer and fall months, the valleys and interior hills of the Eugene SYUs are subject to inversions--cool air stabilizing below warmer air above. When this condition exists, smoke from slash burning will not rise high enough to mix with upper air currents. Specific information on the extent and duration of these conditions within the area is given in Tables 2-1 and 2-2.

Table 2-1 Seasonal Variation of Air Pollution Potential in the Upper Willamette Valley*

Season	Stagnation Upper Layer	Lower Layer	Mixing Between Upper and Lower Air Layers	Air Pollution Potential
Spring	Absent	Present briefly at night	Present	Low
Early Summer	Absent	Present briefly at night	Present	Low
Summer	Present	Present, except in the afternoon; persisting several weeks at a time	Absent	High
Fall	Present	Present; often persisting for a week or more	Absent	Very high
Winter	Absent	Persistent; November to February have a high potential for pollution	Occasionally present	Very high

* Source: Crises Air, Central Lane Planning Council (now L-COG), 1968.

Table 2-2 Slash Smoke Intrusions in Lane County

Year	Number of Burns	Acres	Tons of Slash	Number of Intrusions		
				Total	BLM	Days
1977	626	22,791	761,693	6	2	2
1978	980	30,197	1,084,947	7	2	1
1979	791	40,074	539,438	5	0	0
1980	927	27,086	829,633	13	5	2
1981	897	33,533	594,174	6	2	1

Source: ODEQ 1981; OSDF Annual Reports of Oregon Smoke Management Plans, 1977 through 1982.

Under the Clean Air Act Amendments of 1970, Oregon has been divided into five Federal Air Quality Control Regions (AQCRs) on the basis of pollution concentrations, geography and economics. The Eugene SYUs are in the Willamette Valley region. Air quality in this AQCR is good except in the Eugene-Springfield Area, which has been designated an Air Quality Maintenance Area (AQMA). The Eugene-Springfield AQMA contains sub-areas that are not in attainment with the secondary total suspended particulate standards and the 8-hour carbon monoxide standard (ODEQ 1981). Projected attainment dates are 1985 for carbon monoxide and 1987 for particulates.

Provisions of the Clean Air Act Amendments of 1977 ensure that areas with clean air do not suffer deteriorating air quality. Mandatory Class I areas, within an approximate 100 mile radius of the Eugene SYUs, are Kalmiopsis, Mt. Washington, Three Sisters, Mt. Jefferson, Mt. Hood and Diamond Peak Wilderness areas and Crater Lake National Park. The Eugene SYUs and surrounding areas (except Eugene-Springfield AQMA) are designated Class II which allows only moderate deterioration of air quality. Provisions of the Clean Air Act as Amended in 1977 established under the Prevention of Significant Deterioration (PSD) section, a goal to prevent any future and remedy existing, impairment of visibility in mandatory Class I Federal areas. Mandatory Class I areas, within an approximate 100 mile radius of the Eugene SYUs, are Kalmiopsis, Mt. Washington, Three Sisters, Mt. Jefferson, Mt. Hood and Diamond Peak wilderness areas and the Crater Lake National Park.

Occasionally, smoke from slash burning in the Eugene SYUs has been visible in the population centers of Roseburg and Eugene-Springfield (OSDF 1981). Slash smoke problems (visible smoke) in Lane County are shown in Table 2-2. About 90 percent of the Eugene SYUs is in Lane County.

Geology and Topography

The Eugene SYUs are located within the Coast Range, Willamette Valley and Western Cascades physiographic provinces (Figure 2-1). The Coast Range is characterized by narrow ridges and steep slopes. The steepest slopes are found in the headwalls of tributary streams. Bedrock is primarily sedimentary in origin. Unstable slopes occur where the bedrock consists of weathered, thick-bedded sandstone and siltstone (Flourney formation). The Willamette Valley is a broad alluvial plain situated between the Coast Range and the Western Cascades. Slopes are gentle in the Willamette Valley.

The Western Cascade Province is characterized by a rugged topography with irregular ridges and deep narrow valleys. The rocks are mostly volcanics.

Throughout the Eugene SYUs, slopes range from 0 to 100 percent and average about 65 percent. Elevations range from 15 feet west of Mapleton and 385 feet at Pioneer Villa to 2,590 feet at Roman Nose Mountain, 3,690 feet at Goat Point and 4,725 feet at Huckleberry Mountain.

Soils

A generalized soils map, which contains 24 broad groupings of soils, is shown as Figure 2-2. This map shows a general view of the major soils in the Eugene SYUs.

Soils within the Eugene SYUs are generally capable of producing abundant plant growth. Most soils have a high content of organic matter, moderate to high nutrient levels and medium bulk densities (1.1 to 1.3 gm/cm³). Soils at high elevations, however, are often low in organic matter and nitrogen.

Dry ravelling of soil materials, landslides and soil surface erosion occur naturally throughout the Eugene SYUs. Total soil loss from these factors in the undisturbed forests is estimated to be 0.06 to 0.30 tons per acre per year (t/ac/yr). Soil loss and loss of soil productivity have accelerated as a result of timber harvesting and road building. Eugene District experience has shown that in areas where road construction has taken place and fill-slopes have revegetated, soil loss is approximately 10 t/ac/yr.

The two major kinds of mass movement of soils in the Eugene SYUs are slumps and debris avalanches. Slumps are one or more blocks of soil that have rotated out of a hillside along a bowl-shaped failure plane. Debris avalanches are the rapid movement of incoherent soil, rocks and forest debris down steep draws. Soils that are associated with debris avalanches are usually those loamy and/or gravelly soils formed over sandstone, green tuffs or breccias on 80 percent or greater slopes. Debris avalanches occur on the following soils in the SYUs: Bohannon - Preacher - Digger association (see Figure 2-2), and inclusions of Jason and Umpcoos soils.

Water Resources

The Eugene SYUs lie within three major hydrologic basins, consisting of eight smaller basins (Figure 2-1). There are 178,540 acres of BLM-administered land drained via the Willamette Basin, 132,631 acres drained via the Northern Oregon Coastal Basin and 5,485 acres are drained by the Southern Oregon Coastal Basin. Within these large watersheds, ODEQ has identified a number of smaller streams that have problems

Table 2-3 Water Quality Problems

River or Creek	Hydro-logic Basin ¹	Excessive Debris	Algae and Aquatic Plants	Stream-bank Erosion	Sedimentation	Elevated Water Temperatures
Willamette River	03		X			
Mohawk River	04		X	X	X	X
Middle Fork Willamette River	01	X	X		X	
Coast Fork Willamette River	02		X		X	X
McKenzie River	04				X	
Wildcat Creek	206				X	X
Fall Creek	01	X				X
Winberry Creek	01	X				X
Camp Creek	04					X
Sharps Creek	02			X		
Row River	02				X	
Lost Creek	01				X	X
Mosby Creek	02				X	X
Siuslaw River	206		X	X		X
Coyote Creek	03	X	X	X		X
Long Tom River	03		X	X	X	X
North Fork Siuslaw River	206			X		
Esmond Creek	206				X	
Lake Creek	206	X		X	X	X

Source: ODEQ 1978; BLM URA

¹ See Figure 2-1.

with debris, algae growth, sedimentation, bank erosion and elevated temperatures. The rivers and creeks with non-point water quality problems are shown in Table 2-3. High sediment loads and streambank erosion occur during periods of peak flow (winter and spring), while problems of elevated temperatures and nuisance algae occur during periods of low flow (summer).

Sediment losses from the SYUs depend on a combination of many watershed variables. Within the Eugene SYUs, which are mostly forested, a small portion of the sediment produced is attributable to purely natural forces.

Ground water supplies in the Willamette Basin are generally adequate to meet needs far into the future, due to the rapid recharge of the volcanic aquifer of the Cascades. Ground water in the coastal basins is less reliable due to slow discharge in the sedimentary aquifers.

Ground water quality is very good in all basins, with the exception of a few localized problems with mineralized water, arsine and local pollution of shallow aquifers.

Vegetation

The SYUs are located in the Northwest Coastal Coniferous Sub-biome, which is the most densely forested region in the Coniferous Biome. Characterized by easy regeneration and rapid growth, it produces trees of impressive sizes. The lower vegetative layers are usually poorly developed except where open canopies encourage a lush understory of grasses, shrubs and herbaceous species. Additional information may be found in the BLM Timber Management FEIS.

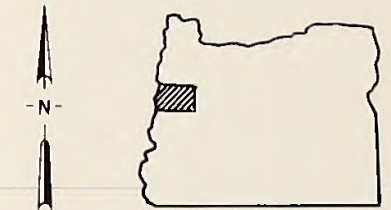
Terrestrial Vegetation

For purposes of this EIS, vegetation is generally described in terms of "zones" adapted from those identified by Franklin and Dyrness in **Natural Vegetation of Oregon and Washington** (1973). A detailed description of each zone and plant community listed below may be found in that source or from data prepared in the Eugene District.

Portions of three major vegetative zones, Pacific Silver Fir, Western Hemlock and Interior Valley are found within the SYUs.

SIUSLAW AND UPPER WILLAMETTE
SUSTAINED YIELD UNITS

Eugene Environmental Impact Statement Area
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LEGEND

PHYSIOGRAPHIC PROVINCES

BOUNDARY

Western Cascade
Willamette Valley
Oregon Coast Range

HYDROLOGIC BASINS and SUB-BASINS

BOUNDARY

Willamette Basin

- 01 Middle Fork Willamette Sub-basin
- 02 Coast Fork Willamette Sub-basin
- 03 Upper Willamette Sub-basin
- 04 McKenzie Sub-basin
- 06 South Santiam Sub-basin

Northern Oregon Coastal Basin

- 204 Siletz-Yaquina Sub-basin
- 205 Alsea Sub-basin
- 206 Siuslaw Sub-basin
- 207 Siltcoos Sub-basin

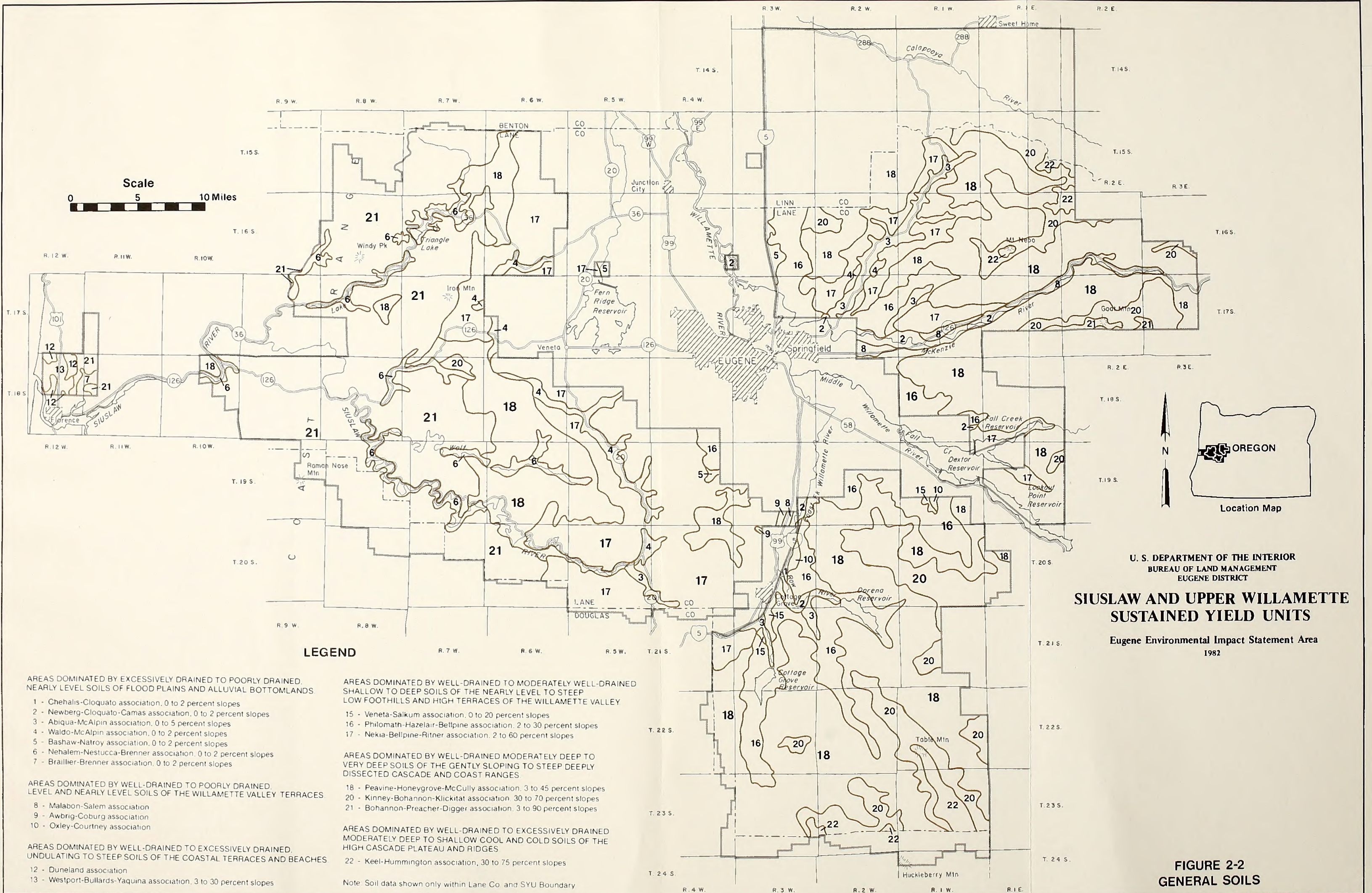
Southern Oregon Coastal Basin

- 301 North Umpqua Sub-basin
- 303 Umpqua Sub-basin

PHYSIOGRAPHIC PROVINCES AND
HYDROLOGIC BASINS

FIGURE 2-1





LEGEND

AREAS DOMINATED BY EXCESSIVELY DRAINED TO POORLY DRAINED, NEARLY LEVEL SOILS OF FLOOD PLAINS AND ALLUVIAL BOTTOMLANDS

- 1 - Chehalis-Cloquato association, 0 to 2 percent slopes
- 2 - Newberg-Cloquato-Camas association, 0 to 2 percent slopes
- 3 - Abiqua-McAlpin association, 0 to 5 percent slopes
- 4 - Waldo-McAlpin association, 0 to 2 percent slopes
- 5 - Bashaw-Natroy association, 0 to 2 percent slopes
- 6 - Nehalem-Nestucca-Brenner association, 0 to 2 percent slopes
- 7 - Brallier-Brenner association, 0 to 2 percent slopes

AREAS DOMINATED BY WELL-DRAINED TO POORLY DRAINED, LEVEL AND NEARLY LEVEL SOILS OF THE WILLAMETTE VALLEY TERRACES

- 8 - Malabon-Salem association
- 9 - Awbrig-Coburg association
- 10 - Oxley-Courtney association

AREAS DOMINATED BY WELL-DRAINED TO EXCESSIVELY DRAINED, UNDULATING TO STEEP SOILS OF THE COASTAL TERRACES AND BEACHES

- 12 - Duneland association
- 13 - Westport-Bullards-Yaquina association, 3 to 30 percent slopes

AREAS DOMINATED BY WELL-DRAINED TO MODERATELY WELL-DRAINED SHALLOW TO DEEP SOILS OF THE NEARLY LEVEL TO STEEP LOW FOOTHILLS AND HIGH TERRACES OF THE WILLAMETTE VALLEY

- 15 - Veneta-Saikum association, 0 to 20 percent slopes
- 16 - Philomath-Hazelair-Bellpine association, 2 to 30 percent slopes
- 17 - Nekia-Bellpine-Ritner association, 2 to 60 percent slopes

AREAS DOMINATED BY WELL-DRAINED MODERATELY DEEP TO VERY DEEP SOILS OF THE GENTLY SLOPING TO STEEP DEEPLY DISSECTED CASCADE AND COAST RANGES

- 18 - Peavine-Honeygrove-McCully association, 3 to 45 percent slopes
- 20 - Kinney-Bohannon-Klickitat association, 30 to 70 percent slopes
- 21 - Bohannon-Preacher-Digger association, 3 to 90 percent slopes

AREAS DOMINATED BY WELL-DRAINED TO EXCESSIVELY DRAINED MODERATELY DEEP TO SHALLOW COOL AND COLD SOILS OF THE HIGH CASCADE PLATEAU AND RIDGES

- 22 - Keel-Hummington association, 30 to 75 percent slopes

Note: Soil data shown only within Lane Co. and SYU Boundary

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BUREAU OF LAND MANAGEMENT
EUGENE DISTRICT
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**FIGURE 2-2
GENERAL SOILS**

The Pacific Silver Fir Zone is limited to a few sections along the southern boundary of the Upper Willamette SYU where elevations reach 4,000 feet. This zone occupies sites which are wetter and cooler than those found in the adjacent Western Hemlock Zone. Vegetative community development processes of the two zones are similar in composition. Commercial conifer species found in this zone consist of Pacific silver fir, western hemlock, Douglas-fir, noble fir, western redcedar and western white pine.

The Western Hemlock Zone extends throughout the SYUs at all elevations. It is famous for its subclimax species, Douglas-fir, which is often the sole dominant tree in the forest. As a pioneer species, Douglas-fir normally constitutes a seral (successional) stage during the vegetative community development process. This zone encompasses six major plant communities with various associations of trees, shrubs and forbs relative to specific climatic conditions such as aspect, moisture, soil type and depth, etc. These communities are listed on a site moisture gradient from dry to wet:

- a. Douglas-fir, ocean spray
- b. Western hemlock, golden chinkapin
- c. Western hemlock, Pacific rhododendron, salal
- d. Western hemlock, Pacific rhododendron, Oregongrape
- e. Western hemlock, swordfern, Oregon oxalis
- f. Western redcedar, western maidenhair fern, ladyfern

The Interior Valley Zone includes the lowlands and valley bottoms enclosed by the Cascade and Coast Ranges. Plant communities vary from grasslands and oak-madrone woodlands in low areas to conifer forests on the slopes. Frequent associates to these plant communities are Douglas-fir, incense cedar, ocean spray, Oregongrape and rye grasses.

Riparian habitat occupies the transitional terrestrial areas from the water's edge to the better-drained slopes. Vegetation in these areas range from a few aquatic species and the hardwood-western red cedar-hemlock type, to the predominant Douglas-fir stand usually found on the slopes.

Habitat stratification for all forested land of the entire Eugene Area is depicted in Table 2-4. The entire Eugene Area includes all lands in Lane County and the lower third of Linn County. Acreages listed are a composite of all public and private ownerships obtained from several sources (USFS; OSDF; OSDT) as well as the BLM forest inventory. The acreages of BLM-administered lands are shown for comparison.

The old-growth forests existing today are complex ecosystems which have evolved by natural selection through successional stages during the

vegetative community development process. Evidence now points to the simultaneous evolution of mycorrhizal tree hosts, hypogeous fungi, and small mammals that function as a transport mechanism for the fungi.

Table 2-4 Existing Forest Habitat Stratification of Entire Eugene Area (Acres)

Habitat Age	BLM ¹	All Lands
Grass/Forb (non-stocked and 0-7 years)	34,300	339,200
Brush/Seedling (8-15 years)	30,100	299,100
Pole/Sapling (16-45 years)	109,500	651,000
Young Second Growth (46-115 years)	59,100	433,000
Mature (116-195 years)	26,400	467,100
Old Growth (196+ years)	48,500	441,600

¹ Based on 1978 inventory (Appendix C, Table C-1).

Source: USDI, BLM; USDA, FS; Oregon State Department of Forestry; Oregon State Department of Transportation (Parks and Recreation Branch)

Considerable research is required to fully understand these relationships and their importance to long-range timber production. It now appears that dispersal of mycorrhizal fungi by small mammals may be a critical factor in forest plantation establishment and survival in some instances (Maser et al. 1978). The functioning of the old-growth forest as a system, however, has not yet been studied in depth. For example, as recently as 10 years ago, nothing was known about sources of nitrogen in old-growth stands. It is now known that lichens which inhabit the canopy of live old-growth trees fix significant amounts of nitrogen which ultimately become available to the whole forest through leaching, litter fall and decomposition. Also, lichens and wood-dwelling bacteria on standing dead trees and logs have recently been identified as significant sites of nitrogen fixation (Franklin et al. 1981).

Seed zones are accepted as generally encompassing a geographic area within which the factors affecting reforestation and subsequent growth are relatively homogenous (Appendix B). Table 2-5 indicates the seed zones and elevational intervals involving BLM-administered lands in the Eugene SYUs.

Table 2-5 Seed Zones and Elevational Intervals in the Eugene SYUs

Elevation Interval	Seed Zones ¹							
	061	062	252	262	471	472	481	482
0 to 500		X	X					
500 to 1,000	X	X	X	X	X			
1,000 to 1,500	X	X	X	X	X	X	X	X
1,500 to 2,000	X	X	X	X	X	X	X	X
2,000 to 2,500	X	X	X	X	X	X	X	X
2,500 to 3,000	X			X		X	X	X
3,000 to 3,500							X	X
3,500 to 4,000							X	X

¹ See Appendix B, Figure B-1.

Table 2-6 Sensitive Plant Species Currently Under Review for Possible Federal Listing

Scientific Name	Common Name	Candidate For ¹	Observations ^{2/}
<i>Aster curtus</i>	Curtus aster	T	B
<i>Aster vialis</i>	wayside aster	E	B
<i>Cypripedium montanum</i>	mountain lady's slipper	T	B
<i>Frasera umpquaensis</i>	Umpqua fraseria	T	A
<i>Lathyrus halochlorus</i>	thinned-leaved peavine	T	A
<i>Lomatium bradshawii</i>	Bradshaw's lomatium	T	A
<i>Sidalcea cusickii</i>	Cusick's sidalcea	T	A

¹ Threatened (T), endangered (E).

² Observed: on BLM - A, on other lands in the SYUs - B, Unobserved - C.

Wetland and Riparian Vegetation

Wetland

Wetlands (see Glossary) on BLM land in the Eugene District are primarily small bogs, or "forested swamps" similar to those described by Franklin and Dyrness (1973). A very large proportion of wetlands are extremely small, one-half acre or less. Due to the small size of individual bogs, and the limited number present on District lands, they constitute a unique habitat. Since these wetlands support vegetation distinctly different than that of surrounding uplands, they contribute to the overall diversity of the vegetative complex.

Primary tree species in wetland areas include western redcedar, western hemlock and red alder, the latter often forming climax communities (Franklin and Dyrness 1973). A great variety of

woody shrubs often dominate the understory. Skunkcabbage and sedges are usually abundant.

Although a few sites have received relatively intense botanical field investigations, relatively little is known about wetland vegetative types in the District. Many of these areas are identified in the District's TPCC inventory and have been removed from the allowable cut base.

Riparian

Vegetation within the streamside riparian habitats/riparian zones (see Glossary) includes a wide range of species and plant communities. Older-forest-dominated areas are similar to associations described by Franklin and Dyrness (1973) for the wet end of moisture spectrums in the Western Hemlock Zone. Examples of riparian communities described for the Interior Valleys Zone (Franklin and Dyrness 1973) are also present on District lands. Most riparian habitat on third

order and larger streams, however, is typical of early seral stage vegetation that succeeds timber harvest.

An inventory of streamside riparian habitat/zones was conducted on the Eugene District in 1979. The objective of inventory was to estimate the extent of this vegetative type within the land base. Results of this inventory are summarized in Tables 2-5A and 2-5B.

**Table 2-5A Average Riparian Widths ¹
Eugene District**

Siuslaw

Stream Order	Riparian Zone ²	One-Half Transition Zone	Riparian Habitat ²
1	40	20	60
2	60	20	80
3	90	30	120
4	140	40	180
5	200	40	240
6	270	40	310

Upper Willamette

Stream Order	Riparian Zone ²	One-Half Transition Zone	Riparian Habitat ²
1	50	20	70
2	50	20	70
3	60	20	80
4	90	30	120
5	120	30	150
6	140	30	170

¹ Distances rounded to nearest 10' each side of stream.

² See Glossary for definitions.

Table 2-5B Miles of BLM Streams by Stream Order

SYU	Stream Order					
	1	2	3	4	5	6
Siuslaw	957	323	153	75	21	19
Upper Willamette	862	305	140	60	14	5
District	1,819	628	293	135	35	24

Sensitive, Threatened and Endangered Plants

Endangered plants are those species that are in danger of extinction throughout all or a significant portion of their range. Threatened plant species are those that presently are not endangered but are likely to become so within the foreseeable future throughout all or a significant portion of their range. Sensitive plants are those species not yet officially listed but are undergoing a status review (see Glossary, Sensitive Species).

Botanical surveys for sensitive, threatened and endangered plants were conducted on the Eugene District from 1978 through 1980 and are continuing. No plants listed or proposed as threatened or endangered under the Federal Endangered Species Act are known to occur in the EIS area. Several species observed in the EIS area are currently under review for listing as threatened or endangered by the U.S. Fish and Wildlife Service (Table 2-6). The final status of these species will be determined as sufficient data are collected.

Animals

Terrestrial Animals

Animal distribution, diversity and abundance are dependent on various factors; vegetation is of primary importance. Each vegetational zone described in the previous section contains a variety of plant communities which may be in different successional stages. Each successional stage has a unique structure and it is primarily this structure to which animal communities respond (Thomas 1979). Structure is a result of many things--tree species diversity, understory vegetation, openings in the canopy, layers of vegetation, presence of snags and down logs are some of the items causing structure (Thomas 1979). While all successional stages have structure, mature and old growth provide the most while pole/sapling and young second growth provide the least. The differences in plant communities, successional stages and structure provide habitat diversity and environmental variables and account for the variety of animals found in the EIS area.

Successional stages are dynamic. They are always progressing toward their climax form and during this progression their animal components are also changing (Thomas 1979). A climax western hemlock forest supports a very different animal association than it did in its early successional stage several hundred years before. Progress toward climax can be curtailed at any point by outside influences, either natural or artificial. For instance, fire or logging may set back succession, and those animal species associated with the current stage will be replaced with those adapted to exist in the early successional stages.

Table 2-7 Habitat Structure of Forest Lands, 1978 Inventory, in the Eugene SYUs (by percent)

Habitat Age	All Forest Lands	BLM	BLM Habitat as a Percent of All Forest Lands *
Grass/Forb (non-stocked and 0-7 years)	13	11	10
Brush/Seedling (8-15 years)	11	10	10
Pole/Sapling (16-45 years)	25	35	17
Young Second Growth (46-115 years)	16	19	14
Mature (116-195 years)	18	9	6
Old Growth (196+ years)	17	16	11

* This column indicates, for example, that while 16 percent of BLM land is old growth, this is 11 percent of all old growth in the defined area.

Source: USDI, BLM; USDA, FS; Oregon Department of Forestry; Oregon Division of Parks and Recreation.

Modifying or removing one particular stage, e.g., old growth, has a profound effect on those individuals and species occurring there. It is recognized that these effects do not stop with just those species, as the ecosystem as a whole is altered by the modification of one of its parts. Certain results may be harmful to some species and beneficial to others, but all are affected.

Grass/forb and shrub/seedling are the earliest successional stages in the forest system. Lands may be dominated by grass and forbs in the earliest years although shrubs may be present. As time progresses, shrubs and seedlings out-compete the grasses and forbs. Food for grazers and browsers is present and, under natural conditions, many habitat niches for small vertebrates occur, i.e., logs, snags and residual trees (Lang 1980b). Early seral stages produced by natural events are generally high in these habitat structures, while those produced as a result of intensive timber management are generally low. These two stages may last 15 to 20 years.

Pole/sapling and young second growth forests replace the previous low-growing open-type vegetation. Forage and browse production is greatly reduced as canopy closure increases. Species diversity decreases and environmental variables are low. However, when left in its natural state, habitat for many species of animals is provided. For example, sharp-shinned and

Cooper's hawks select these young even-age stands as nesting habitat if of suitable density (Reynolds 1979 and 1978). Because of past thinning, existing pole/sapling and young second growth only support about 50 percent of the nesting potential for these species.

After about 120 years, the forest is considered mature and is characterized by the presence of large trees beginning to show decadence. As the forest continues aging into old growth, the canopy opens and snags and large down logs are present (Franklin, et al. 1981). A well developed understory is present and there are several canopy layers. Many species of epiphytic plants are present. Here environmental variables are at their highest, and diversity of both plant and animals is great. Lang (1980), after an extensive literature review, concluded that "old-growth Douglas-fir forests of the Pacific Northwest possess a set of structural and functional characteristics not found in stands younger than about 200-years old. Structural characteristics provide habitats for certain distinctive plant and animal species; they include large, old trees; snags, fallen logs; and complex vegetation structure - The wildlife species composition of old-growth ecosystems includes six species of birds restricted to old growth or mature successional stages. Five mammal species also may be restricted to those stages but available information is inadequate to be certain about these relationships."

There are 27 species of amphibians and reptiles, 97 species of birds and 57 species of mammals that occur in the EIS area that are directly dependent on forest habitats or interspersed non-forest habitats that often are heavily impacted by timber management activities. Some species of animals are quite restricted in their habitat requirements, while others have a wide tolerance. For instance, the robin occurs in most habitat types while the northern spotted owl and bald eagle are dependent on older forest habitats (Forsman et al. 1982; Anthony et al. 1982). A list of these species and some information on their habitat requirements is available in the Eugene District Office.

From the perspective of all ownerships, the progression toward climax in the SYUs has been halted and reversed primarily by planned timber management activities. In 1930, for example, most of the forest land acreage supported mature and old-growth stands. The most recent inventories (Appendices D and E) show a greater diversity (Table 2-7) than that which existed under more "natural" conditions 50 years ago.

The present diversity, however, is a transitory condition. The forest management activities that created the current diversity will, if continued, result in a situation where the oldest successional stage is second growth (46-115 years old).

Acreages of seral stages for all lands, regardless of ownership or administration, cannot be accurately calculated. However, based on data from a variety of sources, seral stage abundance for the entire area was estimated for all forest lands and is shown in Table 2-7. The "all lands" category consists of forest lands within Lane County and the southern one-third of Linn County. Total land area is approximately 2.6 million acres. Bureau forest lands in the table approximate 307,900 acres.

Old-growth forests provide optimum habitat for a variety of animal species (Jones and Stokes 1980; Harris et al. 1982; Lang 1980b) and are important to the entire forest ecosystem (See Appendix B; Seral Stage Distribution Concept). Old-growth habitat totals 48,500 acres or 16 percent of Bureau-managed forest lands in the Eugene SYUs. (Based on 1978 inventory data, current amounts are estimated to be 20 to 40 percent less.)

Within the area defined by the SYUs (about 1.1 million acres), BLM is the only significant Federal land managing agency, and, hence, is the sole provider of habitat for old-growth dependent species. To maintain at least minimum viable populations of those animal species that find their optimum habitat in mature and/or old-growth forest, it is estimated that approximately 15 percent of the forested land base should be in these older seral stages.

For maximum benefits, this acreage should be distributed in large blocks, approximately 1,000 acres in size at 6 to 8 mile intervals, with smaller blocks, 50 to 100 acres in size, scattered between them. This provides for species needing large expanses of habitat as well for those needing less. It also provides a continuum of habitat so that isolation will not occur. If the large blocks are located in areas that would allow ties with other potential habitat blocks on other BLM Districts or U.S. Forest Service lands, their value is increased.

A model was developed (available in the Eugene District office) incorporating large and small block objectives and geographical ties, and was tested against the existing situation and all alternatives. One hundred percent would provide the minimum for maintaining viable populations of animal species requiring mature and/or old-growth habitats. The existing situation for the Eugene District tested at 118 percent for large blocks and 164 percent for small blocks, while geographic ties were at 120 percent. Analysis of each alternative appears in Chapter 3, Wildlife.

Other types of habitat exist and can be modified by forest management practices. Some of these habitats are unique because of their scarcity in the EIS area. Snags provide essential habitat for many species of wildlife, especially birds (Mannan 1980 and 1982). Within the Eugene District, snags provide optimum habitat for 38 species and are used to some extent by 12 other species of birds and mammals that use forest habitats in the SYUs. That cavity-nesting birds feed on insects and play an important part in control of forest insect pests has been well reviewed by Thomas (1979).

Under natural conditions, snags occur throughout the forest as a result of fire, disease and other factors (Cline 1977). Timber harvest practices generally result in their removal for safety and fire prevention. Recent snag surveys by district personnel revealed an average of 0.04 snags per acre in coniferous forests less than 15 years of age under BLM administration. It has been calculated that habitat for snag-dependent species is currently at 34 percent of potential. It has been stated by Thomas (1979 p.72) that "management below the 40 percent level may be too low to maintain self-sustaining populations of a species."

Riparian habitats are extremely important (Thomas 1979; USDI-BLM 1980g). Of the 181 species of terrestrial vertebrates using forest habitats in the planning area, 49 find their optimum habitat in wetland-riparian habitat while another 102 species use it for part of their overall needs. In western Oregon, riparian habitats vary in width; generally, the larger the stream, the wider the riparian habitat. Vegetation within these areas includes plants only found in association with water as well as others including hardwoods and merchantable softwoods.

Currently, there are about 56,700 acres of riparian habitat on BLM-administered lands in the Eugene District. Approximately 41,000 of these acres are along small first and second order streams. The riparian habitat on third order and larger streams represents about 5 percent of the forest land base. About 60 percent of this has been altered by past timber management practices and is in less than optimum condition.

Upland hardwoods add greatly to habitat diversity both structurally and from a species standpoint. Of the 181 species using forest habitats in the SYUs, 13 find their optimum habitat there and another 72 use it for part of their life needs (also see Maser and Franklin 1974). Currently there are about 11,600 acres that are composed primarily of hardwood located on Bureau-administered lands in the SYUs. There are about another 27,500 acres of mixed conifers and hardwoods in which the hardwood component is from 50 to 75 percent.

Roosevelt elk are a very important recreational species in the SYUs. Elk numbers are not evenly distributed throughout the District. They have spotty distribution on the east side but are more evenly distributed on the west side with concentrations in the Siuslaw drainage and its tributaries from Alma to Austa. The approximately 32,000 acres of elk habitat on BLM-administered lands in this area are currently in the following condition:

Forage Area	Hiding and Escape Cover	Thermal Cover	Survival Cover*
0-17 years 26 percent	18-39 years 16 percent	40-119 years 22 percent	120+ years 36 percent

* Survival cover can be substituted for thermal cover but not the other way around.
Source: USDI, BLM Eugene District personnel

The older forest (120 years and older) component is extremely important if high elk productivity is to be achieved and sustained (Starkey, deCalesta and Witmer 1982). In times of extreme temperatures, it functions as survival cover providing forage, temperature moderation and snow interception (Jenkins and Starkey 1980; DeCalesta and Witner 1980; Smithey et al. 1982). Much of the adjacent lands under other ownership have been cut over and provide forage and escape cover. It is primarily Bureau-managed lands that supply the thermal and survival cover component.

Fish

Habitat conditions for fish have been degraded by past logging, road construction, fires and salvage treatments. As a result of recent timber management practices and reestablishment of vegetation, the overall condition of the fish habitat has somewhat stabilized, but for some species and in some stream systems both habitat and wild fish populations continue to decline.

Salmonids are the most important group of fish in the SYUs. For some species of salmonids, wild fish stocks have been reduced to the point where introduction of hatchery fish has been necessary to supplement the wild stock. It is estimated that fish habitat in the Eugene District is currently at 50 percent of optimum for native salmonids. Table 2-8 reflects habitat and population information about salmonids in the SYUs.

Many other species of fish are present in the planning area. Sculpins, suckers, dace and squawfish are some examples. These species have no direct commercial or sport value. Little information on populations is available. Some species may compete with trout and salmon for food and space, while others are used by the trout and salmon as food.

Threatened and Endangered Animals

There are three species of animals officially listed by the U.S. Fish and Wildlife Service and/or the State of Oregon as threatened or endangered that occur at least occasionally in the Eugene SYUs. Table 2-9 lists those species and their status.

The bald eagle is a regular inhabitant of the Eugene SYUs and one pair is known to nest and one other pair thought to nest on BLM-administered land. In addition, a winter roosting area used by up to 15 eagles is located on BLM-administered lands.

Peregrine falcons are occasionally seen in the SYUs. None are known to nest in the area although there are two historic nest sites located adjacent to BLM-administered lands.

The northern spotted owl is a permanent resident of the SYUs. On Bureau-administered lands, 42 habitat units are each known to have supported one pair of owls during the past decade. An additional 12 locations have been identified as occasionally containing owls. These may be juveniles or single birds, as the inconsistency of locating these birds and the quality of the habitat makes it unlikely these areas are capable of supporting breeding pairs.

An additional 72 pairs of owls have been recorded on lands of other ownership within the "all lands" area during this period, primarily on lands administered by the U.S. Forest Service.

No habitat considered critical under Section 4 of the Endangered Species Act of 1973, as amended, has been declared or nominated within the SYUs.

Table 2-8 Cold Water Fish Habitat and Populations ¹

Species	Stream Miles		Condition of Habitat ²				Habitat Trend	Wildfish ³ Population Trend		Current ³ Stocking	
	BLM	Other	Excellent	Good	Fair	Marginal		Westside	Eastside	Westside	Eastside
Chinook	46	237	30%	55%	10%	5%	Stable	Stable	Declining	No	Yes
Coho	138	447	5%	25%	50%	20%	Stable to Declining	Declining	N/A	Yes	No
Steelhead	107	396	10%	40%	40%	10%	Stable to Declining	Declining	Stable	Yes	Yes
Trout	392	1,334	5%	20%	45%	30%	Declining	Stable	Declining	Yes	Yes

¹ Condition and trend are for all lands.

² Stream conditions depend on riparian vegetation, abundance and diversity of instream structure, number and quality of pools, amount of sediment on bottom substrata, spawning gravels, stability of bank and channels and other characteristics.

³ Because of differences, data is displayed separately for western and eastern parts of the district.

Source: BLM Eugene District personnel.

Table 2-9 Threatened and Endangered Species of the Eugene SYUs

Species	Federal Status	Oregon Status
Northern bald eagle <i>Haliaeetus leucocephalus</i> <i>alascanus</i>	T	T
Peregrine falcon <i>Falco peregrinus</i>	E	E
Northern spotted owl <i>Strix occidentalis caurina</i>	-	T

T - Threatened

E - Endangered

Creek, Lorane, Mohawk-Calapooya and Big River-Mosby Creek areas.

Most general sightseeing use occurs in association with travel along major roads. Some people also visit public lands with specific sightseeing goals or may include it as a part of other activities.

Examples of such areas with opportunities for this use include the McKenzie River, Lake Creek Falls, Fall Creek and Teeter Creek Springs.

High quality opportunities are available for water sports, rock collecting and off-road vehicle (ORV) riding. Outstanding opportunities for floatboating are found at the McKenzie River. Agate and jasper collecting is popular in the London area. Within the SYUs, about 6,600 visitor days annually are attributed to off-road vehicle use. The best areas on public land for ORV (especially motorcycle) use include Coburg Hills, Low Pass-High Pass and Lorane-Gowdyville.

The 6,000 acre Windy Peak area, located in the Coast Range about 28 miles west of Eugene, is a steep, heavily timbered and relatively unroaded area with moderate values for primitive recreation. However, the area's irregular configuration precludes much sense of isolation to the visitor.

The Nationwide Rivers Inventory prepared by the Heritage Conservation and Recreation Service (HCRS) and National Park Service (NPS) has identified the Siuslaw River from its source to Lake Creek as a potential National wild, scenic or recreational river crossing public land within the SYUs (USDI, HCRS 1980).

Recreation

Developed recreation sites on public land include Lake Creek, Whittaker Creek, Shotgun, Turner Creek, Clay Creek, Haight Creek and Sharps Creek (see Figure 1-1). Each site has facilities for overnight camping and/or picnicking. Opportunities are also available for dispersed camping and picnicking throughout the SYUs.

High quality stream fishing occurs on public lands along the McKenzie River, its tributaries and Willamette River tributaries. BLM-managed habitat contributes to the excellent fishing on the Siuslaw River and Lake Creek downstream from public lands. Lake fishing for warm water species is available at Hult Pond.

Hunting activity on public lands is for deer, elk, bear and upland game. Hunter success is affected by game populations, ease of movement and shooting opportunities. High quality big game hunting opportunities are available in the Wolf

Table 2-10 Estimated Visitation Attributed to Major Recreation Activities

Activity	Current Visitation ¹ (Visitor Days/Year)	
	Total ² (Lane County)	BLM (Eugene District)
Hunting		
Deer	193,930	20,750
Elk	19,240	1,390
Bear	22,600	3,010
Upland game	70,000	5,640
Fishing		
All anadromous	371,270	17,660 ³
Resident cold water	358,710	17,630 ³
Resident warm water	12,900	2,810
Camping	1,216,000	19,400
Other Day Use ⁴	9,839,400	79,590
TOTAL	12,104,050	167,880

¹ Based on data collected between 1972-1977.

² Total visitation includes use in the coastal region where public lands are limited.

³ Includes downstream fishing for fish reared in BLM-managed streams.

⁴ Total area day use visitation excludes urban and semi-urban activities not generally associated with forest lands administered by BLM.

Cultural Resources

BLM is required by law and executive order to identify, protect and enhance significant cultural resources on public lands. A number of procedures, including those specified in 36 CFR 800.4(a), were used to identify the cultural resources within the SYUs.

A survey of existing cultural resource information (Class I survey) has been completed for the SYUs (Beckham et al. 1981) through a compilation of the area's existing site record data. A thorough survey to locate and identify cultural resources is accomplished prior to ground disturbance or ownership changes. The results of this intensive survey are documented in each site specific environmental assessment.

The criteria used to assess the eligibility of identified cultural resources for inclusion in the National Register of Historic Places are described in 36 CFR 1202.6.

While little of the area has been field surveyed for prehistoric resources due to its steep, heavily forested terrain, there are 87 recorded prehistoric sites on or near public land within the SYUs. Most are trailside and/or hunting camps associated with Indian use of upland resources. An area's available resources such as water, plant and animal foods,

workable stone or amenable terrain probably determined the nature and location of sites.

There are 195 inventoried historic sites on or near BLM-administered land within the SYUs (Beckham et al. 1981). Most of the sites have not been formally recorded and are in need of further documentation. Most historic sites in the SYUs relate to fur trade, settlement, transportation, mining and logging. None of the historic sites on public land are currently listed on the National Register of Historic Places.

No important or scientifically unique paleontologic sites have been identified in the SYUs (USDI, BLM 1981). However, all reports of fossil-bearing deposits are examined by qualified personnel to avoid destruction of significant resources.

Visual Resources

Visual resources are the land, water, vegetation, animals and the other features (as described in this chapter) that are visible on public lands. Within the SYUs, the Bureau's ability to manage for an area's overall scenic quality is often limited due to checkerboard land ownership patterns and the fact that most intermingled private land is utilized for intensive timber management. However, visual resource management (VRM) objectives have been developed based on scenic quality, visual sensitivity and distance zone (see Glossary). Examples of high scenic quality and visually sensitive areas within view of public land include Fall Creek Reservoir, Lookout Point Reservoir, Sharps Creek Recreation Site, Lake Creek Falls, McKenzie River, Dorena Reservoir, Cottage Grove Reservoir, Triangle Lake and portions of the viewshed from Interstate 5.

VRM classes specify management objectives and allow for differing degrees of modification. Objectives for each VRM class follow:

Class I: Provides primarily for natural ecological change (highest level of protection). Generally includes highly scenic and/or highly sensitive areas. Less than 1 percent of the public land in the SYUs is in this class.

Class II: Changes in any of the visual resource basic elements (see Glossary) caused by a management activity should not be evident in the characteristic landscape. A change may be seen but should not attract attention (retention of scenic quality). Generally includes areas with high to moderate scenic quality and/or sensitivity. About 13 percent of the public land in the SYUs has values to qualify it for consideration for Class II management.

Class III: Changes in the basic elements caused by a management activity may be evident in, but should remain subordinate to, the existing

characteristic landscape (partial retention of scenic quality). Generally includes moderate scenic quality and/or sensitivity. About 25 percent of the public land in the SYUs has values to qualify it for consideration for Class III management.

Class IV: Changes may attract attention and be dominant landscape features but should reflect those basic elements inherent in the characteristic landscape (modification of scenic quality--lowest level of protection). Generally includes areas with moderate to low scenic quality that are seldom seen. VRM Class IV incorporates about 62 percent of the public lands in the SYUs.

VRM class delineations for the SYUs are available in the Eugene District Office.

Wilderness Values

Under the terms of the Federal Land Policy and Management Act of 1976 (FLPMA), roadless areas of 5,000 acres or more that have wilderness characteristics are to be reviewed within 15 years for possible wilderness designation. The 1976 Act also states that in the event of inconsistency between it and the O&C Act in so far as they both

may relate to management of timber resources, the O&C Act prevails. Accordingly, the wilderness review provisions do not apply to revested Oregon and California Railroad Grant lands suitable for sustained yield management as commercial timber lands.

No areas within the SYUs are designated wilderness study areas. The intensive wilderness inventory and accompanying maps for Oregon and Washington are available in the Oregon State Office.

Areas of Critical Environmental Concern

Areas of Critical Environmental Concern (ACECs) are areas within the public lands where special management attention is required to protect important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards (FLPMA Section 103(a)). Designation of an area as an ACEC does not necessarily preclude development but rather ensures the protection of sensitive values in those

Table 2-11 Nominated and Potential Areas of Critical Environmental Concern

Site Name	Approximate Size (acres)	Description	Primary Resource Values	Remarks
QUALIFIED FOR ACEC DESIGNATION ¹				
1. Lake Creek Falls	3	Highly scenic waterfalls and swimming area	Scenic, Natural Hazard	
2. Elk Meadows	205	Meadow and shrub communities surrounded by old-growth fir; unique wildlife habitat	Botanic, Wildlife	Potential Research Natural Area (RNA)
3. Horse Rock Ridge	190	Large, grassy bald with diverse flora	Botanic, Wild life, Scenic, Cultural	
4. Long Tom	8	Willamette Valley oak and ash woodland/ grassland ecosystem; unique wildlife habitat	Botanic, Wildlife	
5. Fox Hollow	160	Douglas-fir/Ponderosa pine forest in the Willamette Valley foothills	Botanic	Potential RNA
6. Camas Swale	280	Douglas-fir forest in the Willamette Valley foothills	Botanic	Potential RNA
7. Mohawk	293	Fir, hemlock and cedar forest in the Willamette Valley foothills	Botanic	Potential RNA

¹ Two identification criteria (relevance and importance) derived from the Federal Land Policy and Management Act (1976) were applied to evaluate all areas nominated for ACEC designation. Areas nominated but not qualified for designation failed to meet the criteria as described in the August 1980 Final Guidelines for Areas of Critical Environmental Concern (USDI, BLM 1980). These areas include:

a). Older seral stage conifer forest b). Older seral stage 80+ years component c). Riparian habitat d). Coburg Hills e). Dorena bald eagle habitat f). Northern spotted owl habitat g). Siuslaw drainage Roosevelt elk habitat h). Teeter Creek Spring i). Siuslaw spring chinook habitat j). Pacific Flyway k). Greenleaf Creek watershed l). Blachly Forest Wayside corridor m). McKenzie corridor n). Windy Peak. Further information concerning these areas is available in the Eugene District Office.

cases where appropriate development may take place. Following designation, activity plans are prepared to translate special management requirements for each area into on-the-ground actions.

Of the areas nominated for ACEC consideration during the Eugene District's planning process (see Table 2-11), seven were found to be qualified for ACEC designation. The decision to designate any or all of these areas as ACECs will be part of the Management Framework Plan decision for the SYUs, to be made following completion of this EIS (see Chapter 1, Implementation). Site-specific ACEC management plans will be developed and assessed in EAs following completion of the final land use allocations and timber management plan.

Special Areas

Four areas (Mohawk, Fox Hollow, Camas Swale and Elk Meadows) have potential for Research Natural Area (RNA) designation. Collectively, the first three areas would preserve examples of Willamette Valley foothills forest ecosystems. The 293-acre Mohawk area represents a moist shady microclimate with old-growth forest stands of Douglas-fir, hemlock and cedar. Fox Hollow is a 180-acre tract with sharply contrasting ecosystems. Old-growth fir predominate on the shady north slopes while the dryer crest and south slopes have a mix of pine, fir, cedar, madrone and oak. Camas Swale (280 acres) with its varied terrain offers a diversity of natural conditions represented by such species as fir, pine, chinquapin, cedar, madrone, maple and yew. Elk Meadows (205 acres), on the Calapooya Divide, provides unique wildlife habitat as a result of its diverse plant communities surrounded by old-growth silver fir and Douglas-fir forests.

The Mohawk, Fox Hollow and Camas Swale areas have been identified by the National Park Service (NPS) as potential National Natural Landmarks (Chilcote et al. 1976). Designation of a site as a National Natural Landmark (see Glossary), a program administered by the NPS, would not affect BLM jurisdiction to manage the area.

The 200-acre Vik Road, 70-acre Row River and 240-acre McGowan Creek tracts are currently utilized as environmental education areas (see Glossary). Trails and some other facilities have been constructed in the areas.

Economic Conditions

During 1975 through 1977, logs from the Eugene District were trucked to distributions in Lane (93.3 percent), Linn (6.2 percent) and Douglas counties (.5 percent). Lane and Linn counties taken together are evaluated here as the regional economy affected by the action.

The forest products industry provides 12.1 percent of all employment and 20 percent of total personal earnings in Lane County. In Linn County, the harvesting and processing of forest products provides 16.1 percent of the employment and 23.5 percent of total personal earnings. The flow of BLM timber from lands administered by the Eugene District supports 7.0 percent of the wood products employment and 7.1 percent of the personal earnings in the two-county regional economy.

Description of the Regional Economy

The population of the region has increased more than 27 percent over the last decade and now exceeds 360,000 (Table 2-12). While paralleling a nationwide shift of population westward, the rate of growth in the region exceeded substantially the rate of growth in Oregon which, in turn, exceeded the population growth rate in the United States. Net migration accounted for 67 percent, 63 percent and 66 percent of the population increase for Lane County, Linn County and the region, respectively (Seidel, 1981). Recent data suggest a turnaround in migration patterns; Lane County was estimated to have a 3,354 net out migration between April 1980 and July 1981 (Center for Population Research and Census, 1982).

Table 2-12 Population, 1960-1980

County	1960	1970	1980	Compound Annual Growth Rate	
				1960-70	1970-80
Lane	162,890	213,358	275,226	2.7	2.6
Linn	58,867	71,914	89,495	2.0	2.2
Region	221,757	285,272	364,721	2.6%	2.5%
Oregon	1,768,687	2,091,533	2,633,105	1.7%	2.3%
United States	179,323,175	203,235,298	226,504,825	1.3%	1.1%

Source: U.S. Dept of Commerce Census of Population, years indicated.

Table 2-13 Average Size and Recent Growth of the Labor Force and Employment in Selected Industries in the Region

	Lane County Average Avg.	Lane County Compound Annual Growth 1972-1980 (5)	Linn Economy Average 1978-1980	Linn Economy Compound Annual Growth 1972-1980	Oregon Average 1978-1980	Oregon Compound Annual Growth 1972-1980
Civilian Labor Force	128,400	3.91	38,100	3.29	1,228,000	3.58
Total Employment	117,800	3.52	34,600	2.86	1,141,300	3.38
Wage & Salary Employment	104,000	3.66	30,600	3.27	1,035,600	3.77
All Manufacturing	20,700	-0.56	11,200	1.20	220,600	1.92
Lumber & Wood	13,800	-2.22	5,400	-0.79	77,200	-1.37
Other Durable Goods	3,500	6.97	3,300	4.37	88,000	5.17
All Non-Manufacturing	83,300	4.93	19,400	4.64	815,000	4.30
Trade	25,900	5.46	5,870	4.47	252,700	4.67
Services & Miscellaneous	19,300	7.23	3,700	5.23	184,200	5.65
Government	22,300	3.60	5,600	5.71	196,400	3.18

Source: Computations by EIS staff of data obtained from the Research and Statistics Section, Employment Division, Oregon Dept. of Human Resources. Total employment includes self-employed and proprietors. The other employment categories include only employees covered by either the Oregon Unemployment Insurance Law or the program of Unemployment Compensation of Federal Employees.

The immigration of the 1970's plus an increase in the proportion of women employed or seeking employment caused the labor force to grow faster than total employment (Table 2-13). For example, in Lane County, the annual rate of job creation was 3.52 percent while the labor force was increasing at 3.91 percent annually.

Employment and income growth in the region's trade and service sectors were strong from 1972-1980, paralleling statewide expansion in both categories. A decline in manufacturing employment in Lane County and a lack of significant growth in manufacturing employment in the regional economy during the decade are of local concern (Coopers and Lybrand, 1980; The Fantus Company, 1982). Employment in manufacturing sectors other than wood products increased by 7 percent during the decade and holds promise for renewed expansion when the economy rebounds from the current recession (Economic Consultants of Oregon, 1981). Overall, increases in non-manufacturing employment within the region provided the jobs which absorbed the growth of the 1970's.

Projections show long-term declines in Oregon lumber and wood products employment (Bruner and Hagenstein, 1981). Whether these declines can be offset by continued growth in the non-manufacturing sector and local programs promoting diversification in non-wood manufacturing is still unknown (Coopers and Lybrand; 1980, Economic Consultants of Oregon, 1981; The Fantus Company, 1982). Statewide, total employment in the lumber and wood products sector declined from 1972 to 1980 at a 1.37 percent annual rate while total employment in manufacturing increased by more than 29,100 jobs, an average annual increase of almost 2 percent.

Because lumber and wood products employment is 13 percent of total employment in the region and the sector's output is largely exported to national and international markets, local employment rises and falls markedly with shifts in the business cycle. Figure 2-3 highlights this variability by contrasting unemployment rates in Lane County, Linn County, Oregon and the United States--it shows that Lane and Linn Counties' unemployment rates are higher than Oregon's and the national average, and that gap tends to widen during economic recessions. Employment figures for 1981 underscore the effect that the current recession is having on the lumber and wood products and construction sectors (Table 2-14).

The Effects of Timber Harvest on Employment and Earnings

Timber-related industries play a large role in the region's economy. Approximately one out of nine workers in Lane County and one out of every six workers in Linn County harvests, processes or transports some type of wood product (ratio of lumber and wood products employment to total employment, Table 2-12). In contrast, for all Oregon workers, only one in every fourteen is employed in the wood products industry. In 1972, one of every 52 workers in the U.S. was involved in forest management, harvesting, primary processing or transportation and marketing of wood products (derived from Table A-43, Phelps, 1980).

The Eugene District plays a significant role in providing raw material to the region's lumber and wood products sector. From 1978-1981, an annual average of 187.3 MMBF was harvested from BLM land administered by the Eugene District (Table 2-15). For these years, this represented 13.8 percent of Lane County's average annual harvest from all

**FIGURE 2-3 ANNUAL AVERAGE UNEMPLOYMENT RATES
1972-1981 (CALENDAR YEARS)**

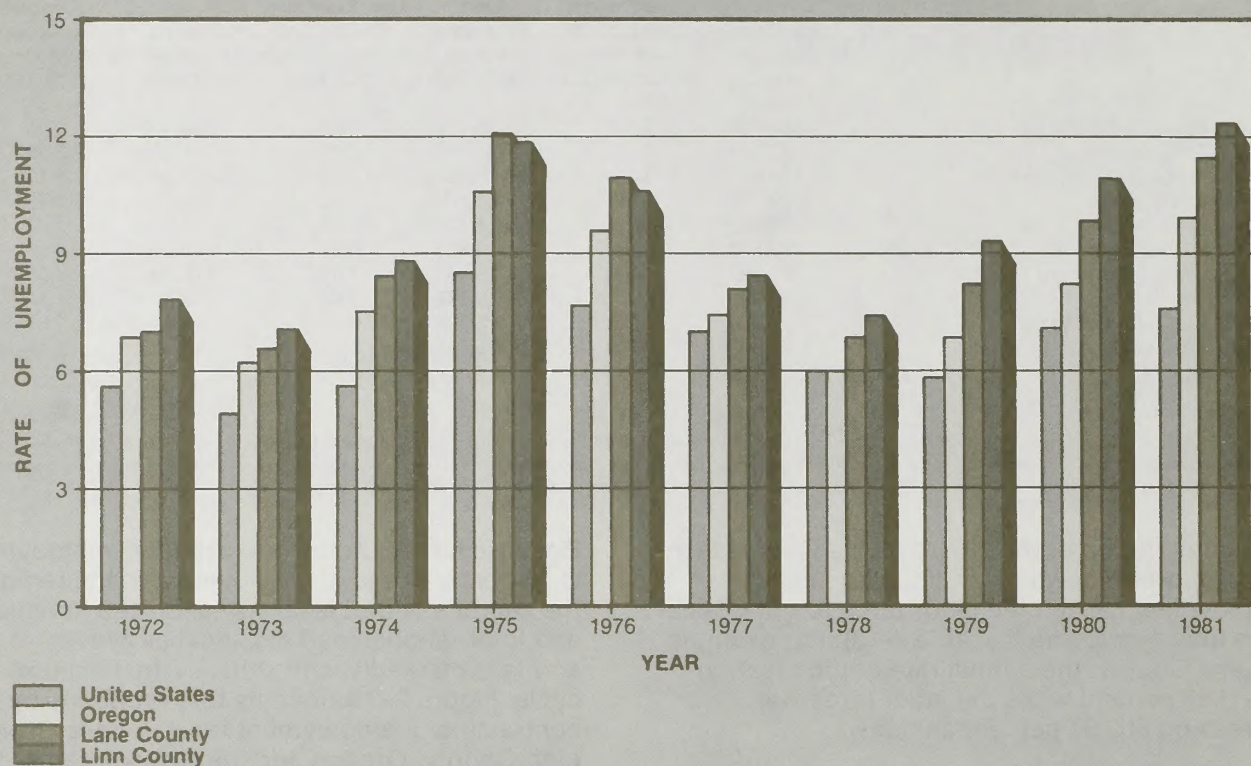


Table 2-14 Changes in Employment, January 1980 to December 1981

	Lane		Linn		Oregon	
	Amount	Percent	Amount	Percent	Amount	Percent
Wage & Salary Employment	-5400	- 5.2	-1330	- 4.3	-43,700	- 4.2
All Manufacturing	-3400	-16.8	-1070	- 9.6	-27,700	-12.7
Lumber & Wood	-3100	-23.1	- 360	-6.8	-19,200	-25.9
Other Durable Goods	- 500	-14.3	- 370	-10.5	- 8,800	- 9.6
All Non-Manufacturing	-2000	- 2.4	- 260	- 1.3	-16,000	- 1.9
Trade	- 300	- 1.2	+60	+ 1.1	-300	- 0.1
Services & Miscellaneous	- 200	- 1.0	+40	+ 1.1	+2,700	+ 1.4
Construction	-1200	-25.0	- 290	-21.0	-13,800	-29.4

Source: Computations by EIS staff derived from data provided by the Employment Division of the Oregon Department of Human Resources.

Table 2-15 Harvests, Sales and Receipts from BLM Timber in the Eugene District (1972-1981)

Fiscal Year	Sales (MMBF)	Removals (MMBF)	Value of Sales (\$1,000,000)	Value of Receipts (\$1,000,000)
1972	193.2	--	11.8	--
1973	231.7	235.8	26.4	--
1974	234.2	249.0	44.1	29.4
1975	215.2	109.7	35.1	15.0
1976	222.5	173.0	35.2	30.8
TQ	--	33.8	--	6.4
1977	214.4	199.1	42.3	35.2
1978	217.9	241.1	45.2	43.1
1979	214.7	176.7	64.1	35.4
1980	218.5	167.0	73.5	35.7
1981	205.8	164.5	53.9	67.0
Annual Average				
1978-1981	214.2	187.3	59.2	45.3

Average Value of per M board feet removed: \$242

Source: Eugene District monthly cutting reports and USDI, Bureau of Land Management. Public Land Statistics, various years.

ownerships and 1.1 percent of the same in Linn County (Table 2-16). In 1976, 15 percent of the logs processed in Lane County were from the Eugene District while 1.8 percent of Linn County's processing activity was based on logs from the District (USDI, BLM, 1980, Table FP-4).

Annually, the harvest of this 187.3 MMBF from District lands provides approximately 270 full-time jobs and \$5.0 million in direct personal income in the two county region (Table 2-17). The processing of timber harvested from the District's lands and sent to Lane and Linn county mills supports approximately 1,120 full-time jobs and \$22.9 million in personal earnings each year. Reforestation of the District's harvested lands averaged the equivalent of 32 jobs and \$300,000 in personal income each year from 1978-1981. The 187.3 MMBF per year harvest yielded \$4.2 million in revenues to Lane and Linn counties. These revenues support approximately 100 employees in county government with a payroll of \$1.3 million.

The wages and salaries paid to loggers, mill workers, reforestation labor and county employees are circulated through the economy. Eventually, these personal earnings are drawn from the county into statewide or national markets. Table 2-17 also reports the cumulative (direct, indirect and induced) effects on the economy of the study area of harvesting and processing timber from BLM-administered lands. In the two counties, the District's timber sale program supports 4,120 full-time jobs and \$74.5 million dollars in local personal income. Overall in western Oregon, the District's timber sale program supports 5,631 jobs and \$99 million in personal income.

Data on total employment and earnings, wood products employment and earning and BLM-dependent employment and earnings are displayed in Tables 2-18 and 2-19.

The Effect of Timber Harvest on Public Revenue

Receipts from the sale or use of resources found on O&C and public domain lands are distributed to State and local governments through distribution formulas established by Congress and the Oregon legislature. Receipts from the sale of timber on all O&C lands in western Oregon are pooled. Fifty percent of this revenue is distributed among the counties with O&C land in proportion to the 1915 assessed value of the O&C lands in each county. Table 2-20 shows the importance of O&C revenue distribution to individual counties. O&C revenues provide 19.8 percent of revenue

from all sources for Lane County, 13.2 percent of revenues for Linn County and 16.7 percent of revenues for all Oregon counties sharing in O&C disbursements. The value of these disbursements to the O&C counties can be equated in terms of property tax equivalents--the amount per \$1,000 assessed value which property tax levies would have to be increased to raise an amount of revenue equal to the county's share of O&C receipts (Table 2-21).

Table 2-16 Average Volume Harvested (1978-1981) Annually on all Ownerships, BLM Lands and BLM Lands Administered by the Eugene District (Millions of Board-Foot Scribner Long Log Scale)

County	Average Total Harvest	Average BLM Harvest All Districts	Percent BLM of Total County Harvest	Average BLM Harvest Eugene District	Percent Eugene District of Total County Harvest
Lane	1,040.7	151.7	14.6	143.5	13.8
Linn	609.6	37.4	16.3	6.9	1.1
Douglas	1,186.6	189.1	15.9	16.3	1.4

Source: Annual Oregon Timber Harvest Reports Prepared by the Oregon State Department of Forestry, Eugene District Planning Area Analysis.

Table 2-17 Average Annual Economic Effects of Timber Management on Lands Administered by the Eugene District (1978-1981)

	Lane-Linn Counties Jobs ¹	Payroll (millions of dollars)	Western Oregon Jobs ¹	Payroll (millions of dollars)
Timber Harvest & Processing (187.3 MMBF)				
Logging	270	5.0	300	5.6
Sawmills, Veneer & Plywood	937	17.4	937	17.4
Pulp, Paper & Particleboard	187	5.5	187	5.5
Reforestation	32	.3	35	.3
O&C Revenue Disbursement (\$4.2 million; Lane & Linn) (\$22.7 million; Western Oregon counties)	103	1.3	532	6.9
Economic Effects on Other Business Sectors	2,591	45.0	3,640	63.3
Total Economic Effect	4,120	74.5	5,631	99.0
Effect per MMBF	22	.398	30	.529

¹ All estimates refer to full-time equivalent; e.g., two jobs of 6-months duration equals one full-time equivalent.

Table 2-18 Average Total Employment, Forest Products Employment and Dependent Forest Products Employment (1978-1980)

County	Average Total Employment	Average Forest Products Employment	Percent Forest Products of Total Employment	Forest Products Employment Dependent on BLM Timber from the Eugene District	Percent of Total Employment Dependent on BLM Timber from the Eugene District	Percent of Forest Products Employment Dependent on BLM Timber from the Eugene District
Lane	117,800	14,260	12.1	1,321	1.1	9.3
Linn	34,600	5,580	16.1	75	.2	1.3
Region	152,400	19,840	13.0	1,396	.9	7.0

Source: These total employment figures represent the aggregate of wage and salary employment and proprietor employment averaged for the 3-year period. Wage and salary employment is from Oregon Employment Division, Oregon Department of Human Resources. Proprietor employment in the forest products industry is estimated to be 3.3 percent of the number of non-farm proprietors in the county (see Resource Industries Analysis, p. 27).

Table 2-19 Total Personal Earnings, Personal Earnings in Forest Products and Personal Earnings Dependent on BLM Timber from the Eugene District (1979)

County	Average Total Personal Earnings (\$1,000,000)	Average Personal Earnings in Forest Products (\$1,000,000)	Percent Forest Products of Total Personal Earnings (\$1,000,000)	Personal Earnings in Forest Products Dependent on BLM Timber from Eugene District	Percent of Total Personal Earnings Dependent on BLM Timber from the Eugene District	Percent of Forest Products Personal Earnings Dependent on BLM Timber from the Eugene District
Lane	1,359	270	19.9	25.0	1.8	9.3
Linn	439	103	23.5	1.4	.3	1.4
Region	1,798	373	20.7	26.4	1.5	7.1

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Economic Information System, Table 25, April 1982. Personal earnings in forest products are 1979 average earnings per employee in SIC 24 and 26 from Oregon Department of Human Resources (1981) times the estimated number of employees and proprietors in Table 2-18.

A net of 4 percent of revenues from public domain lands is remitted to the State of Oregon. These revenues in Oregon are distributed to counties on the basis of total land areas for the benefit of county roads and bridges. Receipts from the sale of timber on public domain lands in the Eugene District were \$35,400 in FY 1980 and \$447,800 in FY 1981. These receipts yielded \$1,400 to Oregon counties in FY 1980 and \$17,900 in FY 1981.

Fishing, Hunting and Other Recreation

The annual direct and indirect economic effects of expenditures made by persons engaged in commercial and sport fishing, hunting and general recreation are listed in Table 2-22. Expenditures dependent on the production of these three resource categories on Eugene District

Table 2-20 Distribution of O&C Receipts to O&C Counties FY 1981-1982

O&C County	County Revenues From All Sources (\$1,000)	O&C Disbursement (\$1,000)	O&C Disbursement As Percent of Total	O&C Disbursement Per Capita
Benton	\$13,512	\$ 2,724	20.2	\$ 38.89
Clackamas	46,280	5,381	11.6	21.95
Columbia	7,349	1,997	27.2	55.25
Coos	15,281	5,720	37.3	90.37
Curry	12,201	3,539	29.0	203.38
Douglas	49,693	24,287	48.9	263.14
Jackson	33,913	15,193	44.8	113.63
Josephine	20,916	11,712	56.0	191.38
Klamath	18,955	2,269	12.0	38.70
Lane	74,671	14,805	19.8	54.70
Lincoln	13,147	349	2.7	9.82
Linn	19,378	2,560	13.2	28.28
Marion	32,919	1,416	4.3	6.75
Multnomah	127,728	1,057	0.8	1.87
Polk	8,436	2,094	24.8	44.89
Tillamook	10,123	543	5.4	25.73
Washington	61,510	611	1.0	2.41
Yamhill	8,387	698	8.3	12.40
All 18 O&C Counties	\$574,399	\$96,955	16.7	\$ 41.22

Source: Bureau of Governmental Research & Service, University of Oregon 1983

Table 2-21 O&C Revenue Distribution to Counties Expressed as Property Tax Rate Equivalent and as Percent Supplement to Total Levy, Fiscal Years 1978-1981

County	Amount per \$1,000 Assessed Value ¹				Percent Supplement to Levy ²			
	1978	1979	1980	1981	1978	1979	1980	1981
Benton	\$ 2.26	\$ 2.03	\$ 2.05	\$ 1.94	12.3	12.4	10.5	8.2
Clackamas	1.17	1.01	0.90	0.79	5.4	5.5	4.6	3.5
Columbia	1.77	1.86	1.86	1.58	12.7	13.0	11.7	10.4
Coos	5.32	4.81	4.59	4.17	31.9	29.0	25.3	19.8
Curry	9.81	8.38	7.09	6.71	102.1	92.9	109.2	67.2
Douglas	12.44	11.59	11.50	10.56	110.3	103.8	79.5	67.9
Jackson	6.90	5.85	5.51	5.07	39.3	41.2	33.0	27.2
Josephine	11.78	10.04	9.56	8.58	74.4	89.8	63.0	61.4
Klamath	1.85	1.73	1.68	1.53	13.4	13.7	11.7	10.9
Lane	2.91	2.48	2.36	2.22	14.1	13.6	11.6	10.3
Lincoln	0.40	0.33	0.31	0.27	2.5	2.2	1.6	1.8
Linn	1.39	1.37	1.30	1.26	8.2	8.5	7.1	6.2
Marion	0.43	0.39	0.36	0.33	2.0	2.0	1.7	1.5
Multnomah	0.09	0.08	0.08	0.07	0.4	0.4	0.4	0.3
Polk	2.75	2.43	2.41	2.22	13.6	13.1	12.2	9.9
Tillamook	1.14	1.03	0.93	0.83	7.7	6.4	8.7	5.7
Washington	0.13	0.11	0.10	0.09	0.6	0.6	0.5	0.3
Yamhill	0.75	0.67	0.64	0.50	3.7	3.6	3.1	2.7
Average	2.19	2.54	1.81	1.67	10.9	10.9	9.5	7.8

¹ Represents county O&C distribution for fiscal year (ending September 30) divided by total assessed value (in thousands) on January 1 of same calendar year.² Represents O&C distribution as percent of total property tax levy for following year, e.g., FY 1977 distribution as percent of 1977-78 levy.

Source: BLM Facts-Oregon and Washington, various years; Oregon Dept of Revenue, Oregon Property Tax Statistics, various years.

Table 2-22 Annual Economic Effect of Fishing, Hunting and Other Recreation (1979)

	Lane & Linn Counties	
	Jobs	Payroll
Fisheries	52	\$370,000
Hunting	27	\$135,000
Other Recreation	43	\$258,000
Total	122	\$763,000

Source: USDI, BLM 1980b

BLM-administered lands generated the equivalent of 122 full-time jobs and \$763,000 in local personal income each year.

Social Concerns

The social environment affected by the Eugene SYU's timber management program includes individuals, organizations and communities. Primarily affected are people working in timber harvesting, timber processing or forest management and people using forestland for recreation. Also concerned are providers and users of public service financed by O&C timber receipts. Workers and forestland users most directly affected live in Lane, Linn and Douglas Counties. Public services financed by O&C timber receipts are provided by the 18 counties identified in Table 2-20.

The description of the social environment presented here is based on Centaur Associates, Inc. 1979, USDI BLM, 1979b USDI BLM, 1980b, and people's attitudes and opinions as expressed during scoping and analyzed in other BLM timber management EISs for western Oregon.

Social Dimensions of Timber Industry Employment

The social aspects of employment include people's dependence on particular jobs and the availability and accessibility of that type of job. The number of timber industry jobs dependent on Eugene District harvest levels is a measure of the social environment affected.

The actual number of jobs involved is at least 1,321 in Lane County and 75 in Linn County (Table 2-18). Since these numbers represent a measure of full-time equivalence, the actual number of employees is larger. This represents 9.3 percent of the forest products employment in Lane County and 1.3 percent in Linn County. This is 1.1 percent of total employment in Lane County and 0.2 percent in Linn County.

Public Services

BLM's timber management program in the Eugene District may affect public services in all 18 counties in western Oregon receiving revenue from O&C timber sales receipts. Timber sales from the Eugene District have accounted for about 17.5 percent of the O&C revenues for the 18 western Oregon counties from all sources. O&C payments made up 19.8 percent of the Lane County revenues and 13.2 percent of the Linn County revenues in FY 1981-82 (Table 2-20). The contribution of Eugene District timber receipts to the O&C counties can be calculated by multiplying 17.5 percent times the column of Table 2-20 labelled O&C Disbursements As Percent of Total.

Attitudes and Opinions

Individuals and organizations have expressed viewpoints about BLM forest management, most often regarding herbicide use, old growth preservation and the level of allowable cut. This dialogue has included public meetings, letters and personal conversations. Some people favor the use of herbicides as a tool for timber production; others oppose its use for ecological, health and economic reasons. Some people argue that a reduction or elimination of the use of chemical herbicides will increase opportunities for manual labor and yield a net increase in total forest based employment. Some people favor preserving old growth for ecological diversity, preservation of wildlife and as a recreational and visual asset. Others favor cutting old growth to stimulate employment and satisfy consumer demands. Some people favor a high allowable cut level for economic reasons. Others believe that lower allowable cut levels will result in greater forest diversity with a wider variety of recreational and subsistence opportunities and ecological benefits.

A statewide survey (Harris 1979) included a question about public preferences for various uses of Federal lands in Oregon. Table 2-23 presents the data for the Willamette Valley sub-area, which does not include metropolitan Portland, and for the entire state.

Community Stability

The O&C Act requires BLM to manage the O&C lands for, among other things, "economic stability of local communities and industries." Some small communities are largely dependent on forest industry employment, and the possibility exists that a major employer in a small community may be highly dependent on timber resources from the Eugene District.

Since BLM timber is sold by competitive bid, various communities will be affected to a different extent in different years. Using data from 1975-77, for an example, it is possible to identify the types of communities that could be affected in the

future, and to show that they would probably be affected differently. Tables 2-24 and 2-25 are included to provide an illustration of the distribution of BLM timber from the Eugene SYUs; they are not intended to suggest that the specific communities mentioned would receive the amount of BLM timber shown in any future years.

Table 2-24 shows the distribution of Eugene District timber to various communities in Lane, Linn and Douglas Counties for the years 1975-77. Mills in the Eugene-Springfield metropolitan area received 41 percent of the Eugene District total, with the remainder going to smaller communities.

Table 2-25 shows the estimates of wood processing jobs in those communities that use Eugene District timber. Wood processing jobs are the only manufacturing jobs in Culp Creek, Mapleton and Noti, and over 75 percent of all manufacturing jobs in Sweet Home, Lebanon and Coburg. Table 2-25 presents information related only to direct employment in wood processing jobs. There are additional jobs in those communities related to timber harvesting and manufacture of wood products.

**Table 2-23 Changes Survey Respondents Want to See in the Use of Federal Lands
(Percent distribution omitting undecided respondents)**

Use	Oregon			Willamette Valley		
	More Use	No Change	Less Use	More Use	No Change	Less Use
Wildlife Habitat	61	30	8	62	31	6
Hiking/Backpacking/ Camping	52	38	8	53	35	10
Wilderness Areas	44	38	16	44	40	14
Off-road vehicles/ Snowmobiles	13	24	60	13	23	61
Timber Production	41	38	19	40	36	22
Hunting/Fishing	51	40	7	52	40	7

Source: Harris 1979.

Table 2-24 ¹ Eugene District, BLM Log Flow ² Average for 1975, 1976 and 1977, in MBF

Destination by County and Town	Siuslaw Sustained Yield Unit		Upper Willamette Sustained Yield Unit		Town Total From the Eugene District
	Noti R.A.	Lorane R.A.	Mohawk R.A.	Lorane R.A.	
Douglas County					
Reedsport	--	843.0	--	--	843.0
Lane County					
Coburg	9,333.0	1,427.0	--	--	10,760.0
Cottage Grove	--	846.0	--	21,805.3	22,651.3
Creswell	--	1,798.0	514.0	--	2,312.0
Culp Creek	4,667.0	2,141.0	--	17,438.3	24,246.3
Cushman	--	1,268.0	--	--	1,268.0
Eugene/Springfield	14,000.0	15,308.0	13,537.3	28,012.7	70,858.0
Junction City	333.0	--	1,180.7	--	1,513.7
Mapleton	1,667.0	2,089.0	--	--	3,756.0
Marcola	--	172.0	--	--	172.0
Noti	3,333.0	1,515.0	1.3	74.3	4,923.6
Vaughn	12,667.0	6,679.0	--	--	19,346.0
Linn County					
Foster	--	891.0	--	--	891.0
Lebanon	--	--	324.0	--	324.0
Sweet Home	--	--	9,141.0	--	9,141.0
Total	46,000.0	34,977.0	24,698.3	67,330.6	173,005.9

¹ Source: Centaur Associates, Inc. 1979, Table III. 1-5² Douglas-fir only, which was over 90 percent of the total harvest for these years.

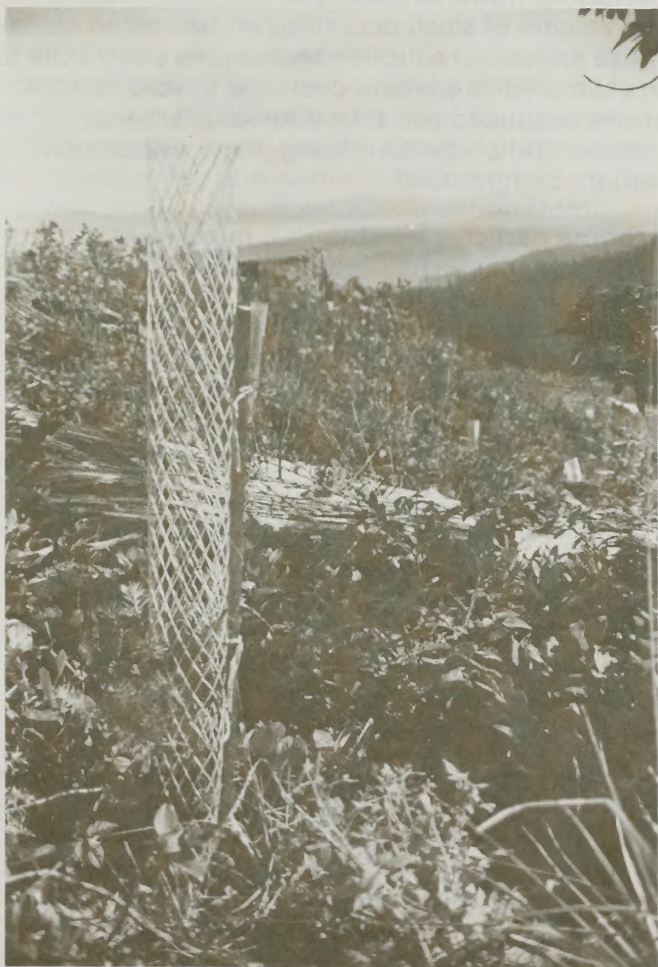
Table 2-25 Estimates of Significance of Eugene District Timber on Employment in Wood Processing

County and Town (1978 pop.)	Number of Jobs ¹ in Wood Processing	MMBF from ² Eugene Dist.	Number of Processing Jobs Based on Eugene District Timber ³ (Using 6.0/MMBF)	Percent of Processing Jobs Based on Eugene District Timber
Douglas County				
Reedsport (5,250)	172	0.843	5.1	2.9
Lane County				
Coburg (855)	100	10.760	64.6	64.6
Cottage Grove (7,400)	934	22.651	135.9	14.6
Creswell (1,830)	203	2.312	13.9	6.8
Culp Creek	520	24.246	145.5	28.0
Cushman	Data not available			
Eugene/Springfield (145,500)	5,400	70.858	425.1	7.9
Junction City (3,000)	221	1.514	9.1	4.1
Mapleton	510	3.756	22.5	4.4
Marcola	Data not available			
Noti	120	4.923	29.5	24.6
Vaughn	Data not available			
Linn County				
Foster	Data not available			
Lebanon(9,560)	1,903	0.324	1.9	0.1
Sweet Home (7,250)	895	9.141	54.8	6.1
Totals	10,978	151.328	908.0	8.3

¹ Source: State of Oregon, 1978² From Table 2-25³ A rounded average for the west-central region, based on 1976 data in Centaur Associates, Inc., 1979, Table IV. 1-1, page 83.

CHAPTER 3

ENVIRONMENTAL CONSEQUENCES



Introduction

In this chapter, environmental consequences (impacts) are compared to the existing situation as described in Chapter 2. Economic impacts are based on the existing situation plus projections of price and revenue levels under Alternative 6 (No Action). The significant impacts resulting from implementation of the preferred alternative and each of the alternatives are analyzed in relation to these baselines. A tabular comparison of composite impacts from each alternative is shown in Table 1-3. Analysis, including the scoping process, indicates that timber management would have no significant impacts upon climate, geology, topography, minerals, grazing, agriculture, utilities, communication sites, energy use and wilderness. Therefore, these topics are not discussed.

The major actions which cause impacts are timber harvest, road construction, site preparation (includes slash burning and herbicide use), plantation maintenance and release, plantation protection, precommercial thinning and fertilization. Significant effects to the local area and its economic base can also occur depending upon which alternative and harvest volume levels are ultimately selected. These would include changes in employment, personal income and sharing of sale receipts with county governments.

In analyzing the impacts of the Original Proposed Action (Alternative 7), a sample 5-year (1984-1988) timber sale plan (available for review at the Eugene District Office) was developed and used, where applicable, to assess potential site-specific timber sale impacts. Although a sample 5-year timber sale plan is used for analysis purposes, actions identified are considered typical for the entire decade, except impacts on scarce wildlife habitats will be greater in the second half of the decade. Possible conflicts identified in this chapter for specific sales will be thoroughly addressed in detailed site-specific environmental assessments. Timber management treatments not included in the timber sale plan (planting, vegetation control with herbicides, animal damage control, precommercial thinning and fertilization) are analyzed at the proposed 10-year levels. Site-specific environmental assessments will be prepared when specific acreages are identified for each treatment. Analysis of the alternatives is based on the different levels of treatments shown in Table 1-1.

Two time frames are used in the analysis process. The short term is the first 10 years following the adoption of a new timber management plan. The long term is defined as beyond 10 years. Other time periods pertinent to specific impact discussions are used as necessary and identified in the text.

Analysis of long-term impacts for all alternatives is based on the assumption that the alternatives would be continued for many decades. In fact, the 10-year timber management plan and related land use allocations selected after completion of the EIS will be subject to revision at the end of one decade.

A basic assumption of the analysis is that sufficient funding and personnel will be available for implementation of the final decision.

Impacts on Air Quality

During the construction of new roads and maintenance of older roads, fine particulate matter would be disturbed. This dust settles back to earth in relatively short distances, does not adversely impact anyone away from the construction sites and, thus, will not be considered further.

The major impact to air quality in the SYUs would be from slash burning. Estimated levels of burning activity by alternative are given in Table 1-1 (Site Preparation/Broadcast Burning).

Regardless of the alternative selected, all burning would be done in accordance with the Oregon Smoke Management Plan. Normally, smoke would be carried into upper air levels and away from populated areas. Occasionally, unforecasted weather changes will cause some smoke to return

to surface areas, causing visible intrusions in nearby residential areas. When slash fires burn or smolder overnight, the cooling nighttime temperatures generally bring residual smoke down valleys which may cause visibility and increased particulate problems. The probability of intrusion would be highest under Alternative 1, due to more acres burned, and lowest under Alternative 10. Past experience indicates that visible intrusions may affect the population centers of Eugene-Springfield and Roseburg. Reported smoke intrusions from BLM Eugene District slash burns affected the area around Eugene in 1981 (OSDF 1982). Between 1977 and 1981 Eugene BLM was responsible for 11 of the 37 (30 percent) reported smoke intrusions in Lane County. None of the visible smoke intrusions has led to violations of Oregon or national air quality standards.

Since 1980, there has been an effort to shift the prescribed fire workload from the traditional fall season to spring and early summer. It is estimated that 90 percent of the prescribed fire workload will occur in the spring and early summer. As table 2-1 shows, this is the season of best smoke dispersion opportunities. In the spring, larger fuels and the duff have fuel moistures too high to sustain fire. This results in less volume consumed and a corresponding less volume of smoke produced. Climatic conditions in the spring also increase the efficiencies of prescribed fire mop-up activities, resulting in less residual smoke. The trend in increasing wood utilization is also contributing to less volume of slash occurring on harvested acres. These emission reduction techniques contribute to an estimated 35 percent decrease in volume of smoke produced per acre burned. (Personal communication Dr. Sandberg, PNW Experiment Station, Seattle, 1983.)

Airborne particles less than 1.0 microns in diameter make up 80 percent of smoke particulates. Particles of this size have very low fall velocities, about 5 cm/hour, and therefore travel distances of approximately 100 miles. Particles of this size also scatter visible light (0.3 microns blue to 0.8 microns red) which cause visibility intrusions.

Depending on the accuracy of future forecast of wind direction and speed and ventilation index, visibility intrusions may occasionally occur in the Eugene-Springfield AQMA, the Roseburg AQMA, or the Class I areas of Kalmiopsis, Mt. Washington, Three Sisters, Mt. Jefferson, Diamond Peak or Mt. Hood Wilderness Areas (Personal communication Dr.s Deeming and Sandberg 1982).

The wood component of slash is made up of about 50 percent carbon, 6 percent hydrogen, 43 percent oxygen and small amounts of nitrogen and other elements. When burning occurs, temperatures of 570° F to 2550° F are maintained (Hall 1972) which produce carbon dioxide (CO₂) and water vapor.

The whitish column of smoke observed from controlled slash fires is made up of over 90 percent water vapor and CO₂ (Table 3-1).

The contaminants most frequently found in slash smoke are carbon dioxide (CO₂), carbon monoxide (CO), nitrous oxides (NO_x), hydrocarbons (HC) and respirable fine particulates (Sandberg et al. 1978).

Conclusions

The major impact to air quality would be visible smoke from slash burning. Although occasional intrusions into population areas or Class I wilderness areas are expected, none are expected to violate primary air quality standards for total suspended particulates.

Impacts on Soils

The major impacts of timber management on soils are compaction, landsliding, topsoil erosion and depletion of organic matter, nitrogen and other nutrients. Each results in a loss of soil productivity (see Glossary). Timber management activities include road, fire trail and landing construction and yarding logs. Scarification and slash burning are cause agents. The amount of landslides and surface erosion is influenced by the steepness of slopes, soil properties, amount of disturbance and remaining litter cover, and the amount and intensity of precipitation (Pritchett 1979).

Standard design features would be employed to minimize adverse impacts on soils. Compacted soils from tractor logging in clearcut units would be ripped or tilled to partially restore productivity. Loss of productivity due to compaction from

tractor logging in partial cut units cannot be mitigated during the rest of the rotation. Partial and total suspension yarding systems would be used to minimize soil disturbance. New roads would be located away from streams and on ridgetops and designed to avoid undercutting or overloading unstable slopes. Excess road material on unstable and potentially unstable slopes would be end-hauled to reduce landsliding. Scarification would be done during dry soil conditions without piling soil. Slash burning and scarification would be minimized on thin, droughty or nitrogen-deficient soils.

Table 3-2 shows estimated acres upon which soil productivity would be lost as a result of timber management using standard design features during the first decade under the proposed action and alternatives.

Soil compaction results primarily from the weight and shearing forces involved in dragging logs and operating ground-based logging equipment. Compaction hinders root penetration and water percolation and availability, reducing vegetation growth. Decreases in root penetration of 35 to 65 percent can reduce the vegetative productivity of soils by 10 to 25 percent (Power 1981a). In the Eugene District, tractor logging has been found to reduce soil productivity for the entire cutting unit by 11.8 percent due to compaction (Wert and Thomas 1981). Yarding systems using ground-based equipment have a greater adverse impact on soils than cable systems which drag the logs. One end suspension has a lesser impact than systems providing no suspension. Systems using total suspension have the least impact on soils. Compaction and reduced infiltration capacity have been found to last at least 55 years (Power 1974

Table 3-1 Average Emission Components From Slash Burning (Tons/Decade)

	Alternative									
	1 Max./EFD	2 Max. Tbr.	3 Def Har.	4 S.S.D.	5 E-W Cor.	6 No Action	7 P.A.	8 No Herb.	9 Eco.	10 Full Eco.
Tons of Slash Burned	803,495	775,325	759,917	739,409	724,512	650,675	681,926	607,099	403,522	294,480
Particulates ¹	16,873	16,282	15,958	15,528	15,215	13,664	14,320	12,749	8,474	6,184
Hydrocarbons ²	10,044	9,692	9,499	9,243	9,056	8,133	8,524	7,589	5,044	3,681
Carbon Monoxide ³	104,454	100,792	98,789	96,123	94,187	84,588	88,650	78,923	52,458	38,282
Sulfur Oxides ⁴	Negligible									
Nitrous Oxides ⁵	1,607	1,551	1,520	1,479	1,449	1,301	1,364	1,214	807	589
Water Vapor and Carbon Dioxide ⁶	Greater than 90 percent of the Mass of Combustion Products									
Total	132,978	128,317	125,766	122,372	119,907	107,687	112,859	100,475	66,783	48,736

¹ Particulates are near 0.1 micrometer in diameter. Average emission of 17-67 pounds/ton slash burned.

² Hydrocarbons are a diverse class of compounds containing hydrogen, carbon and oxygen.

³ Carbon monoxide (CO) is very short lived in the natural environment and quickly dilutes and also converts to CO₂.

⁴ Sulfur oxides (SO_x) are produced in small quantities, since most forest residues contain less than 0.2 percent sulfur.

⁵ Nitrous oxides (NO_x) are found in some very hot fires, but this is not generally a problem in prescribed burns. The temperature required to fix atmospheric nitrogen is over 2800° F and such a temperature is not frequently attained in slash burns.

⁶ Carbon dioxide (CO₂) is not an air pollutant in the usual sense. About 1 ton of burned fuel produces 1 to 1 1/2 tons of CO₂ (Ryan et al. 1976, Cited in Sandberg et al. 1978).

Table 3-2 Estimated Loss of Productivity During First Decade (acres) ¹

Process	Alt.1 EFD	Alt.2 Max. Tbr.	Alt.3 Def. Har.	Alt.4 S.S.D.	Alt.5 E-W Cor.	Alt.6 No Action	Alt.7 O.P.A.	Alt.8 No Herb.	Alt.9 Eco.	Alt.10 Full Eco.
Road Construction ²	2,107	2,107	2,031	2,015	1,921	2,002	2,031	2,031	2,103	1,626
Yarding Systems (Compaction) ³	2,353	2,271	2,226	2,226	2,125	2,010	2,003	1,784	1,201	860
Landsliding	10	9	9	9	9	8	9	8	6	5
Dry Ravelling	Acreage data unavailable									
Nutrient Depletion	Acreage data unavailable (see Table 3-4)									
Totals	4,470	4,387	4,266	4,250	4,055	4,020	4,043	3,823	3,310	2,491

¹ Productivity loss of commercial timber resulting from road construction and landslides is long term. Loss from compaction has been estimated to last at least 55 years.

² From Table 1-2.

³ These are equivalent net acres (acres compacted x percent loss of productivity due to compaction).

Cited in Fredriksen and Harr 1979) and therefore may last longer than harvest rotation periods.

Site scarification and slash piling by tractors with brush rakes compacts soils and displaces topsoil. This practice can be expected to reduce soil productivity by 11 to 22 percent (Clutter and Dell 1978). One study in the Salem District showed a reduction of 17 percent in productivity after scarification (Power 1981b). Topsoil is also removed by dragging logs and by constructing fire trails, roads and landings with heavy equipment.

Landslides (debris avalanches) in the form of rapid, shallow soil mass movements down hillslopes appear to be increased by timber harvesting activities. Road building results in an increase of occurrence of debris avalanching ranging from 25 to 340 times, and clearcutting by 2 to 4 times (Swanston 1976). Areas prone to slides are typified by shallow, noncohesive soils on steep slopes where subsurface water may be concentrated (i.e., road ditches) and where natural drainages have spacing of 400 feet or less (Gresswell et al. 1979). Soils such as Bohannon, Preacher, Digger or Jason can be expected to landslide when harvested of trees on steep slopes, or when roads are constructed across them. Most failures can be expected at or near headwalls; however, no logging will be done in any area where an analysis shows that a failure is probable because of the new logging. New slope stability models are being developed. The removal of excess material during roadbuilding (end-hauling) is presently a district practice, and district experience with this method indicates less failures of roads than when debris was side-cast. Estimates of landslides considering such practices are presented in Table 3-3.

Table 3-3 Estimated Landslide Erosion in Tons/Decade by Alternative

Alternative	Roads	Clearcuts	Totals
Present Condition	60,945	27,497	88,442
1	64,032	33,830	97,862
2	64,032	32,643	96,675
3	61,658	31,995	93,653
4	61,327	31,140	92,467
5	58,291	30,505	88,796
6	60,720	27,396	88,116
7	61,658	28,712	90,370
8	61,658	25,508	87,166
9	63,756	16,990	80,746
10	49,183	12,399	61,582

Material from debris avalanches usually scour stream channels to bedrock, ending in debris dams (Hughes and Edwards 1978).

Dry ravelling in disturbed areas takes place throughout the year in the SYUs and results in loss of topsoil and decreased soil depth. When vegetation and duff are removed by yarding logs, slash burning or other practices, surface soil is free to move and ravelling is accelerated. On steep, south-facing slopes ravelling may continue up to 10 years after disturbance or until vegetation becomes reestablished. Recent research has shown that by not burning or by using cool burns, dry ravelling can be dramatically reduced. Cool burns and no burning are standard design features where dry ravelling is predicted.

Nitrogen in forest soils is formed in organic matter and humus layers. Nitrogen and other nutrient losses from the forest ecosystem is dependent on the intensity of the fire. Cromack (1979) showed

losses of about 600 pounds per acre in old-growth Douglas-fir at the H.J. Andrews Experimental Forest. An average burn on the Eugene District is estimated to remove nearly 500 pounds per acre from an old-growth stand.

Standard mitigating measures minimize soil fertility loss by fire. Cool spring burns that volatilize few nutrients are prescribed on a priority basis. (Table 3-4 shows nitrogen losses.)

Table 3-4 Nitrogen Losses Caused by Mild Burning (Tons/Decade)

Alternative	Nitrogen
1	10,895
2	10,513
3	10,304
4	10,029
5	9,825
6	8,823
7	8,761
8	8,215
9	5,472
10	3,993

Conclusions

Impacts to soil and soil productivity are mainly due to road construction, landslides, and compaction. Alternative 1 has the greatest impacts on long- and short-term losses while Alternative 10 has the least. Acres lost from production range from 2,491 under Alternative 10 to 4,470 under Alternative 1. Less significant impacts include nutrient losses, dry ravelling and top soil removal.

Impacts on Water Resources

Forest management activities which would impact water resources include road building, timber harvest, slash burning and application of fertilizers and herbicides. These activities can affect water yields, seasonal streamflow characteristics (peaks and low flows) and instream water quality (sedimentation, temperature, dissolved oxygen, nutrients and organic substances). The significance of each impact would depend upon the amount of timber harvested in each watershed, the proximity of the activities to streams and the site-specific application of mitigating measures.

Water Quantity

Forest harvest activities would have very little effect on the streamflow of larger rivers draining the SYUs. Table 3-5 shows estimates of annual water yield from public lands in the SYUs for each alternative, compared to the existing yield and undisturbed watershed.

Although the effect of timber harvest on streamflow in the larger rivers would be small, local short-term increases in water yield would occur in clearcut areas. Removing forest vegetation reduces evapo-transpiration (see Glossary), thereby increasing the amount of rainfall available for streamflow. Studies of clearcutting small watersheds in western Oregon showed that water yields from clearcut areas increased 26 to 43 percent following harvest (Harris 1977; Rothacher 1970; Harr et al. 1979). Based on Rothacher's (1970) study of clearcutting in the central Oregon Cascades, water yield from clearcut areas in the SYUs is expected to increase 35 percent. The duration of increased water yields is not easily predicted; however, varying degrees of altered yields may last up to 35 years (Kovner 1956, Cited In Harr et al. 1979). Compacted soils and roads are permanent sources of water yield increase.

In addition to altering total annual water yields, timber harvest would affect the timing and magnitude of seasonal streamflows in small watersheds in the SYUs. Rothacher's (1970, 1973) study of small watersheds near the SYUs showed fall and spring peak flows were increased by logging, although extreme winter peaks were relatively unaffected. A recent analysis (Christener 1981) suggests that extreme winter peaks may also be increased by timber harvest if the peaks occur from heavy rainfall on an existing snowpack. Summer low-flow levels would also be increased by timber harvest. Studies of other small watersheds in the central Oregon Cascades (Rothacher 1971) suggest minimum flows for small watersheds in the SYUs would increase up to 300 percent. Although relative changes in minimum flows may be large (200 to 300 percent), absolute changes would be small, due to naturally low levels of streamflow during the summer months (Ibid.). Increases in peak and low flows would be greatest in small watersheds sustaining the greatest increases in clearcut acreages during the next decade.

Water Quality

Timber harvesting, road building and slash burning would increase sediment discharge from affected small watersheds in the SYUs. Fredriksen and Harr (1979) reported that logging in the central Oregon Cascades increased suspended sediment yield 23 times the natural rate (undisturbed condition) in a patch cut watershed with roads, and nine times the natural rate in a clearcut watershed without roads. Hughes and Edwards (1978) reported that sluice-outs from intermittent streams in clearcuts were eight times as large (on a per acre basis) as from intermittent streams in undisturbed watersheds, and most (85 percent) resulted from headwall failure. These sluice-outs originated during storms which occur every 5 to 12 years. Similar increases in sediment

Table 3-5 Estimated Annual Water Yield, End of First Decade

Watershed		Present Condition	Alt. 1 Max./EFD	Alt. 2 Max. Tbr.	Alt. 3 Def. Har.	Alt. 4 S.S.D.	Alt. 5 E-W Cor.	Alt. 6 No Action	Alt. 7 P.A.	Alt. 8 No Herb.	Alt. 9 Eco.	Alt. 10 Full Eco.
01 Middle Fork Willamette	Clearcut	1,738	2,141	2,066	2,025	1,971	1,931	1,734	1,817	1,614	1,075	785
	Water Yield ¹	2,957,887	2,957,000	2,957,295	2,957,295	2,957,295	2,957,295	2,957,000	2,957,000	2,956,704	2,956,113	2,955,817
	Percent Change	0	0.02	0.01	0.01	0.01	0.01	<0.01	<0.01	-0.01	-0.03	-0.04
02 Coast Fork Willamette	Acres Clearcut	9,329	11,479	11,077	10,857	10,566	10,351	9,296	9,742	8,655	5,765	4,207
	Water Yield	1,196,000	1,198,152	1,197,794	1,197,554	1,197,196	1,197,076	1,196,000	1,196,478	1,195,282	1,192,412	1,190,737
	Percent Change	0	0.18	0.15	0.13	0.10	0.09	<0.01	0.04	-0.06	-0.30	-0.44
03 Upper Willamette	Acres Clearcut											
	Water Yield	4,963	6,107	5,893	5,776	5,622	5,507	4,946	5,183	4,605	3,067	2,238
	Percent Change	8,890,000	8,891,778	8,890,889	8,890,889	8,890,889	8,890,889	8,890,000	8,890,000	8,889,111	8,889,111	8,886,444
04 McKenzie	Acres Clearcut	6,363	7,832	7,558	7,407	7,209	7,062	6,342	6,647	5,905	3,933	2,870
	Water Yield	4,231,000	4,233,538	4,232,692	4,232,692	4,232,269	4,232,269	4,231,000	4,231,423	4,230,154	4,226,769	4,225,077
	Percent Change	0	0.06	0.04	0.04	0.03	0.03	<0.01	0.01	-0.02	-0.10	-0.14
06 South Santiam	Acres Clearcut	0	0	0	0	0	0	0	0	0	0	0
	Water Yield	2,121,000	2,121,000	2,121,000	2,121,000	2,121,000	2,121,000	2,121,000	2,121,000	2,121,000	2,121,000	2,121,000
	Percent Change	0	0	0	0	0	0	0	0	0	0	0
205 Alsea	Acres Clearcut	208	257	248	243	236	232	208	218	194	129	94
	Water Yield	1,099,000	1,099,110	1,099,110	1,099,110	1,099,000	1,099,000	1,099,000	1,098,000	1,098,000	1,098,000	1,098,780
	Percent Change	0	0.01	0.01	0.01	<0.01	<0.01	0	-0.01	-0.01	-0.01	0.02
206 Suislaw	Acres Clearcut	13,821	15,778	15,225	14,922	14,523	14,227	12,777	13,391	11,897	7,924	5,783
	Water Yield	1,543,000	1,545,777	1,545,005	1,544,453	1,544,080	1,543,617	1,541,457	1,542,383	1,540,222	1,531,736	1,531,427
	Percent Change	0	0.18	0.13	0.10	0.07	0.04	-0.10	-0.04	-0.18	-0.73	-0.75
303 Umpqua	Acres Clearcut	1,009	1,244	1,200	1,176	1,145	1,121	1,007	1,055	938	625	456
	Water Yield	5,412,000	5,412,000	5,412,000	5,412,000	5,412,000	5,412,002	5,412,000	5,412,000	5,412,000	5,411,459	5,411,459
	Percent Change	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	-0.01	-0.01
Totals Yield (Ac.-Ft.)		27,449,000	27,459,242	27,455,785	27,454,993	27,453,729	27,453,146	27,447,457	27,448,284	27,442,473	27,426,006	27,420,741
Percent Change		0	0.04	0.03	0.02	0.02	0.02	-0.01	<0.01	-0.02	-0.08	-0.10

¹ Figures expressed are in acre-feet.

yield can be expected in small watersheds within the SYUs where mass soil movement (debris avalanching) is the dominant erosion process (see Impacts on Soils). In undisturbed watersheds, streams are usually capable of transporting more sediment than is delivered to them (Rice et al. 1979). During and following timber harvest, road construction and slash burning, sediment and debris would be delivered to drainage systems. Sediment discharge would then no longer be determined by the availability of sediments, but by the transporting ability of streams. Increased water yields (Table 3-5) would also increase the ability of streams to transport sediments. Where stream energy is insufficient to transport all the sediment, deposition would occur. Estimated sediments from timber management on BLM-administered lands are shown in Table 3-6.

Surface vegetation left undisturbed in areas bordering streams can act as a filter and retain soil particles eroded from the surface of disturbed areas, thereby reducing suspended sediments in

streams. The effectiveness of sediment buffers is dependent upon slope, type and density of vegetation, duff layer and buffer width. When water temperature is not a concern and careful planning is used in partial cutting of buffers (falling timber away from streams, no tractor harvest and no burning), the removal of merchantable timber may not adversely affect the sediment trapping ability of the buffer (Froehlich 1982, personal communication). Buffers would protect third order and larger streams in Alternatives 3, 4, 5, 7 and 8, and protect all streams in Alternatives 9 and 10. Vegetative buffers along first and second order streams would be provided as necessary to minimize impacts on water quality in Alternatives 3, 4, 5, 7 and 8. No buffers are planned in Alternatives 1, 2 and 6. When buffers are left on third order and larger streams, sediment produced from first and second order streams will enter at the headwaters and be carried down the drainage system whenever stream energy is sufficient for transport.

Table 3-6 Estimated Increased¹ Sediment from Timber Management Activities on BLM-Administered Land, End of First Decade (Tons/Decade)

Alternative	Landslides ²	Raveling	Roads	Total
Present Condition	66,332	17,676	3,631	87,639
1. (Max./EFD)	73,396	21,748	3,831	98,975
2. (Max. Tbr.)	72,506	20,986	3,831	97,323
3. (Def. Har.)	70,240	14,398	3,686	88,323
4. (S.S.D.)	69,350	14,013	3,666	87,588
5. (E-W Cor.)	66,597	13,728	3,485	83,810
6. (No Action)	66,087	17,611	3,630	87,328
7. (P.A.)	67,778	12,921	3,686	84,385
8. (No Herb.)	65,337	11,478	3,686	69,023
9. (Eco.)	60,560	0	3,812	64,023
10. (Full Eco.)	46,187	0	2,940	49,127

¹ Sedimentation increase treats only new roads, landslides and raveling.

² Assumes 75 percent of landslide material from Table 3-3 becomes sediment.

The chemical quality of surface water would be affected by slash disposal by broadcast burning. In one Oregon Cascades watershed studied by Fredriksen (1971), instream concentrations of ammonia-nitrogen and manganese reached peak levels of 7.6 and 0.44 parts per million (ppm), respectively, when runoff from rainfall that extinguished the burn entered the stream. In the SYUs, only Alternatives 9 and 10 would provide full protection for streams. Ammonia-nitrogen and manganese concentrations could exceed recommended water quality standards (0.02 ppm for free ammonia-nitrogen, 0.05 for manganese) in some first and second order streams for several days following slash burning. However, water from these streams would quickly be diluted upon entering third order or larger streams. Impacts to water quality are not significant.

Due to insignificant surface runoff in areas to be fertilized, substantial increases in nutrient concentrations in streams following forest fertilization are not expected in the SYUs. Pelleted urea dissolves slowly and is utilized by vegetation before it can be translocated.

Timber harvest affects stream temperatures by removing shading vegetation from streambanks. Stream temperature increases of 10° F or more have been recorded following removal of streamside vegetation by clearcutting and burning in both the Oregon Cascades and Coast Range (Brown and Krygier 1970; Levno and Rothacher 1969). Alternatives 9 and 10 provide temperature maintenance for first order and larger streams. Under Alternatives 1, 2 and 6 removal of merchantable timber would reduce the effectiveness of buffers to provide adequate shade resulting in increased temperatures. Downstream shading does not significantly lower temperatures of streams warmed by upstream exposure (Brown et al. 1971).

Where required to meet district standards for water quality, first and second order streams in Alternatives 3, 4, 5, 7 and 8 would be protected through use of one or more of the following design features: 1) falling away from the streams, 2) yarding away from the stream, 3) completely suspending logs over the stream, 4) leaving the buffer strip along the stream uncut, 5) yarding across the stream in predesigned corridors only and 6) intermediate supports for logs.

The effects of herbicide application on water quality have been described elsewhere (USDI, BLM 1978). Design elements (see Chapter 1) such as buffer strips are expected to minimize herbicide drift or accidental direct spraying of water bodies. Amounts of herbicide reaching streams beyond these barriers would be insignificant and would not adversely affect water quality. Movement of herbicides through the soil (leaching) is usually measured in terms of inches or a few feet (Norris 1975). This is a slow process that would not lead to stream contamination, because the herbicide would degrade before reaching free water (Ibid.). For additional discussion, see Chapter 3, Impacts on Animals and Impacts on Human Health.

Conclusions

Timber harvest would have a very little effect on water yield in the larger rivers and streams. Sedimentation would be expected to be greatest under Alternative 1 and least under Alternative 10. Increased stream temperatures can be expected in Alternatives 1, 2 and 6. Overall impacts are greatest in Alternative 1 and least in Alternative 10.

Impacts on Vegetation

This section describes the impacts of implementing a timber management plan on

vegetation. Significant adverse impacts would occur to wetland and riparian vegetation in Alternatives 1, 2 and 6. This would be inconsistent with Executive Orders 11988 and 11990. Aquatic vegetation would be protected to the degree affected streams under the Oregon Forest Practices Act. Alteration of natural plant community structure and diversity on lands included in the timber production base would be the most significant impact on terrestrial vegetation.

Wetland Vegetation

Although wetland sites are removed from the intensive timber base in the Timber Production Capability Classification, wetland vegetation is adversely impacted by timber management activities. When small bogs of less than one-half acre and their surrounding ecotones are located within timber sale unit boundaries and cannot be feasibly deleted from the logging area, severe impacts to the microclimate and vegetative structure are caused by harvest and site rehabilitation activities. Even when excluded from the logging area, some alteration of the microclimate of the bog occurs when the surrounding upland forest is removed.

Alternative 10 provides the best protection for wetlands due to the large proportions of the land base placed on an extended rotation. All alternatives except 1, 2 and 6 provide for deletion of wetlands and their ecotones from logging areas where topography and logging capabilities permit. Additionally, varying amounts of wetlands are included in old-growth rotation or withdrawals areas, in Alternatives 3, 4, 5, 7, 8 and 9.

Terrestrial and Riparian Vegetation

Management treatments applied under each alternative would impact the existing vegetation in direct relation to the level of treatment shown in Table 1-1. Impacts to riparian habitat are expected to be insignificant under Alternatives 9 and 10 (over 35,000 acres protected). However under Alternatives 1 and 2, riparian habitat would be included in adjacent areas scheduled for final harvest and subsequent management treatments. Alternative 6 would provide protection for 295 acres along third order and larger streams. Alternatives 3, 4, 5, 7 and 8 would protect 8,805 acres of riparian zone adjacent to third order and larger streams through a direct withdrawal; additional riparian zones along these streams overlap withdrawals and extended rotation (350 years) allocations for wildlife and seral stage distribution. To varying degrees, these old-growth allocations will also provide maximum protection for some first and second order streams where those allocations overlap the rotation zones. Except where buffers are required to maintain water quality standards, areas adjacent to first and

second order streams within the intensive timber management allocation would be harvested under all alternatives except 9 and 10. The resulting impact would be alteration of the riparian habitat in and around those areas where harvesting operations would occur. The degree of impact would range from removal of the old growth component where individual trees are removed to severe alterations where clearcutting occurs.

Timber harvesting initiates secondary plant succession by overstory removal, creating openings in the forest canopy similar to those created by natural disturbances. Different cutting practices (i.e., clearcutting and single tree selection methods) open the canopy to varying degrees, thereby influencing the plant composition and duration of the plant communities differently.

Clearcutting completely removes the forest canopy, thereby allowing the establishment of the first successional stage (grass/forb). Openings in the canopy created by commercial thinning, and to a lesser extent mortality salvage, could result in insignificant growth increases of understory vegetation.

Vegetation composition in the SYUs would change according to the level of harvest proposed under each alternative. When compared to the existing forest profile, this change is notable by a shift of acreage from one age class to another (i.e., old growth to non-stocked or 0-7 year age group). This acreage shift is best shown by a percent change in individual age class stratification as shown in Tables 3-7A and 3-7B. Long-term effects (1st, 2nd, 5th and 10th decades) were projected and are displayed in Appendices D and E.

The full scope of potential benefits that might accrue from old growth retention is yet unknown. Maintaining a representative structural component of old growth Douglas-fir across a range of environmental variables until these processes are better understood may be essential to maintaining the long-term productivity of timber stands.

Management criteria (Appendix B) utilized to identify large block areas indicate that 15 areas currently exist at the seed zones and elevations listed in Table 3-8. The number of large block areas which would remain intact over the short- and long-term are shown for each alternative.

Yarding practices to be employed during the 10-year period consist of ground or partial suspension cable systems, cable with full suspension and tractor systems. Each system impacts ground vegetation to different degrees relative to the soil disturbance resulting from the harvest system used.

Broadcast burning is the primary method of slash disposal proposed under each alternative. The short and long-term effects of burning are relative

Table 3-7A Approximate Acres of BLM-Administered Timber Lands and Percent of Change After One Decade (1979-1988)

Habitat Age	Current Acres	Alt. 1 Max./EFD	Alt. 2 Max. Tbr.	Alt. 3 Def. Har.	Alt. 4 S.S.D.	Alt. 5 E-W Cor.	Alt. 6 No Action	Alt. 7 O.P.A.	Alt. 8 No Herb.	Alt. 9 Eco.	Alt. 10 Full Eco.
Grass/Forb Non-stocked and 0-7 years	34,270	38,456 +12%	37,041 +8%	36,336 +6%	35,330 +3%	34,383 +1%	27,366 -20%	30,683 -10%	29,188 -15%	18,567 -46%	13,322 -61%
Brush/Seedling 8-15 years	30,112	38,542 +28%	38,385 +27%	38,307 +27%	38,195 +27%	38,111 +27%	43,020 +43%	39,605 +32%	37,512 +25%	36,310 +21%	35,750 +19%
Pole/Sapling 16-45 years	109,511	105,367 -4%	105,367 -4%	105,367 -4%	105,367 -4%	105,367 -4%	115,902 6%	105,367 -4%	105,367 -4%	105,367 -4%	105,367 -4%
Young 2nd Growth 46-115 years	59,125	78,848 +33%	79,056 +34%	79,153 +34%	79,290 +34%	79,410 +34%	92,391 +56%	79,720 +35%	80,203 +36%	81,503 +38%	78,804 +33%
Mature 116-195 years	26,426	19,017 -28%	19,616 -26%	19,918 -25%	20,297 -23%	20,768 -22%	14,013 -47%	21,605 -18%	22,990 -13%	28,571 +8%	24,570 -7%
Old Growth 196+ years	48,425	25,529 -47%	26,294 -46%	26,755 -45%	27,372 -43%	27,705 -43%	0 -100%	28,853 -40%	30,684 -37%	35,640 -26%	48,425 0%

3-7B Approximate Acres of BLM-Administered Timber Lands and Percent of Change After Two Decades (1989-1998)

Habitat Age	Current Acres	Alt. 1 Max./EFD	Alt. 2 Max. Tbr.	Alt. 3 Def. Har.	Alt. 4 S.S.D.	Alt. 5 E-W Cor.	Alt. 6 No Action	Alt. 7 O.P.A.	Alt. 8 No Herb.	Alt. 9 Eco.	Alt. 10 Full Eco.
Grass/Forb Non-stocked and 0-7 years	34,270	35,444 +3%	33,079 -3%	32,026 -7%	32,387 -5%	32,044 -6%	29,612 -14%	30,693 -10%	24,269 -29%	22,886 -33%	13,145 -62%
Brush/Seedling 8-15 years	30,112	42,393 +41%	40,716 +35%	39,894 +32%	38,928 +29%	38,142 +27%	34,768 +15%	36,176 +20%	31,883 +6%	21,108 -30%	14,781 -51%
Pole/Sapling 16-45 years	109,511	107,255 -2%	107,098 -2%	107,020 -2%	106,908 -2%	106,824 -2%	118,513 8%	108,318 -1%	105,995 -3%	105,023 -4%	104,463 -5%
Young 2nd Growth 46-115 years	59,125	109,041 84%	111,330 +88%	111,216 +88%	109,212 +85%	107,742 +82%	109,799 +86%	101,757 +72%	113,315 +92%	98,876 +67%	98,496 +67%
Mature 116-195 years	26,426	3,815 -86%	5,725 -78%	5,669 -79%	4,458 -83%	6,370 -76%	0 -100%	9,485 -64%	13,590 -49%	25,406 -4%	23,215 -12%
Old Growth 196 years	48,425	5,701 -88%	5,701 -88%	7,979 -84%	11,940 -75%	12,898 -73%	0 -100%	17,371 -64%	14,738 -70%	30,550 -37%	50,508 4%

¹ At the end of the 10-year proposal period (approximately 1993) the acreage distribution would lie near the mid point of the 2nd decade.

Note: These columns will not have the same total acres due to the differences in the land use allocations of each alternative. This is especially true for Alternative 6 which also utilizes the 1972 land base and inventory. Also, figures for Alternative 3 assume that deferred acres would be retained in intensive timber production base after the first decade.

Source: BLM allowable cut printout and district inventory.

Table 3-8 Large Block Areas Protected by Alternative for Seral Stage Preservation

Seed/Elevation Zone/Interval	Existing Situation	Alt. 1 Max./EFD	Alt. 2 Max.Tbr.	Alt. 3 ² Def.Har.	Alt. 4 S.S.D.	Alt. 5 E-W Cor.	Alt. 6 No Action	Alt. 7 P.A.	Alt. 8 No Herb.	Alt. 9 Eco.	Alt. 10 Full Eco.
062/1,000-1,500	4	0	0	4	1	1	0	4	1	4	4
252/500-1,000	3	0	0	2	1	1	0	2	1	2	3
252/1,000-1,500	4	0	0	1	1	1	0	1	1	3	4
252/1,500-2,000	1	0	0	0	1	0	0	0	0	0	0
481/1,500-2,000	1	0	0	1	1	1	0	1	1	1	1
481/2,000-2,500	1	0	0	1	1	1	0	1	1	1	1
481/2,500-3,000	1	0	0	1	1	1	0	1	1	1	1

Total Acres

¹ All Western Oregon Districts (BLM) have met to determine which large block areas would be preserved in each District, minimizing duplication. Alternative 4 (S.S.D.) represents the portion which would be protected in the Eugene SYUs (also see Appendix B).

² If acres deferred from harvest during the first decade were subsequently harvested, none of these representative large block areas would remain.

to the severity of the burn. According to research in the Coast Range of western Oregon (Morris 1970), 5.8 percent of the total area burned was severely burned. While 16.6 percent of the area remained unburned, 22.2 percent and 55.4 percent received moderate and light burns, respectively. The lighter burn provides a greater percent of herbaceous and brush cover within the first 2 years after burning. Scheduled replanting of coniferous seedlings in the area would contribute to the alteration as a fire-induced plant community became established.

Coniferous seedlings raised in nurseries would be planted (Table 1-1). Under the best possible site conditions, rapid natural regeneration could occur every 3 to 7 years depending on seed crops. Under artificial regeneration, seedlings are generally planted the first year following harvest. Planting stock is grown to specific size standards to allow it to have a competitive advantage in relation to moisture regime and vegetative condition existing on the site. Therefore, planting shortens the amount of time required for succession to progress beyond the grass/forb and shrub/seedling stages. The major long-term impact associated with planting is that, by increasing the competitive advantage of Douglas-fir, early successional stages are more quickly passed through, and Douglas-fir attains site dominance more rapidly. This acceleration not only reduces the residence time of early successional stages but also precludes the development of maximum plant diversity. Planting an estimated 15,500 acres with genetically improved trees during the 10-year period would not have a significant effect on the natural gene pool in either the short- or long-term. No significant adverse long-term impacts are anticipated with the eventual planting of genetically improved trees on 90 percent of the intensive timber production base for each alternative. Maintaining a broad selection of parent trees would ensure variability in genetic base populations. The artificial regeneration program on BLM-administered lands is not expected to significantly affect the stand or species composition of the entire Eugene Area. (Compare Appendices D and E.)

Herbicides are used to manipulate the species composition, size, density, vigor and presence of vegetation. Plant habitat altered by herbicides would increase over that in the past decade in all alternatives except 8, 9 and 10. Applications are targeted to control grass and broadleaf species to provide a competitive advantage for conifers. Different herbicides work best for selected target species and herbicides are often used in combinations. In forestry applications, the desired effect is acceleration of plant succession from early successional stages to later stages dominated by conifers. Gratkowski and Lauterback (1974) reported on the height growth

of young Douglas-fir for a 5-year period after release. Percentage increase in height growth over non-released trees varied from 130 percent (for trees 1 foot high when spraying occurred) to 149 percent (for trees 6 feet high) for basal spray plots and from 255 percent (for trees 1 foot high) to 171 percent (for trees 6 feet high) for aerial spray locations.

Non-target vegetation immediately adjacent to spray units may be affected by the movement of herbicides through the air. Such impacts are limited, but not eliminated entirely, by buffer strips and by application techniques (Gratkowski 1974). Although the direct vegetational impacts of herbicide application are short term, the effects of accelerating the establishment of conifer stands are long term. Once the coniferous stands become dominant they remain until the trees are harvested or until natural disasters remove them. For greater detail on herbicides and the provisions for monitoring of herbicide application, see the FEIS Vegetation Management with Herbicides: Western Oregon - 1978 through 1987 (USDI, BLM 1978).

Some timber stands would be fertilized under all alternatives. This practice would result in immediate increases of nutrient availability for all vegetation on the site. However, resultant increased vigor and growth are directed at commercial conifer species. These are short-term impacts lasting for an average of 7 years, depending on site quality.

Sensitive, Threatened or Endangered Plants

Unidentified populations of sensitive, threatened or endangered plant species could be susceptible to any impacts described under terrestrial vegetation. The direct effects of injury or death to the plants could cause the immediate elimination of a species in all or a significant portion of its range. The more subtle effects of vegetative community changes could cause the eventual elimination of a species locally through loss of competitive ability relative to other vegetation on the site.

If any species of vascular plant is determined to be threatened or endangered by the U.S. Fish and Wildlife Service, any action that contributes to its extinction or to its threatened or endangered status would be in violation of the Endangered Species Act of 1973 as amended. Therefore, environmental analysis accomplished prior to any site-specific action would identify any threatened or endangered plant species known to be present on the site and appropriate measures to be taken to protect the species.

Conclusions

Alterations to plant community structure diversity and longevity would be the most

significant impacts to terrestrial vegetation on those lands included in the timber production base. Continued timber management would not allow natural succession to replace these communities because future forests would be harvested before they reached the 90-year age class.

Ecosystem management assumes that every component of a naturally functioning system serves a purpose and that each component benefits the system. At the present time, there is no definitive description of the functioning of the old-growth system and its importance to long-range timber production.

The symbiotic relationships between plants and animals that function in old-growth stands are not fully understood and may prove to be important to long-term timber production. Until this is better understood, maintaining a representative range of the old-growth forest and associated floral and faunal genotypes may be important. Alternatives 1, 2, and 6 would not meet the criteria to provide an adequate representation of the original old-growth systems over the short or long-term. The remaining alternatives (Alternatives 3, 4, 5, 7, 8, 9 and 10) would provide adequate representation during the short term. Research during the proposal period could indicate that a larger representation (15 percent or more of the forest land base) of original old-growth systems is critical to long-term timber production. Given this situation, only Alternatives 9 and 10 would provide opportunities for adequate old-growth preservation.

The short-term use of the commercial forest lands for timber harvest would increase the long-term production of wood fiber as old, slow-growing stands are replaced by young, fast-growing stands managed for optimum wood production. In the long term, as the area approaches a balance of age classes in the intensive timber base, maximum growth of commercial coniferous species is achieved. Intensive timber management practices such as planting and herbicide application would favor survival of coniferous trees and discriminate against hardwood trees, shrubs and herbaceous vegetation. However, elimination of hardwood trees, shrubs and herbaceous vegetation would not occur.

Existing older forest communities scheduled for final harvest would be converted to early successional stage communities. This impact is unavoidable. Table 3-7 indicates the amount of old-growth habitat that would be irretrievably lost as long as those acres are managed intensively for timber production under all alternatives. Permanent new road construction ranging from 1,626 acres in Alternative 10 to 2,107 acres under Alternative 1 would result in the unavoidable elimination of vegetation on these acres.

Alternatives 3, 4, 5, 7 and 8 provide protection for riparian zone vegetation associated with stream orders 3 through 6 through a withdrawal of 8,700 acres. Additionally, varying amounts of wetland and riparian areas are protected within the extended (350-year) rotation areas or withdrawals allocations for other resources in Alternatives 4, 5, 7 and 8, and in Alternative 3 for at least the short-term.

Impacts on Animals

Timber operations impact both animals and their habitats. The greatest impacts are long term and in most cases, occur on animal habitats, rather than to individual animals. Thomas (1979), Meslow (1977) and Wight (1974) have shown that certain species of vertebrates are associated with forests that are of a particular age class and resulting structure. Some species habitat requirements are rigid, others are more flexible.

Combining field investigations with principles of island biogeography (Harris et al. 1982) demonstrated the dependence of 36 species of wildlife, on old-growth forests as primary habitat. The significance of primary habitat, according to Harris, is that "Although some of these species may use the short-rotation forests as secondary habitat, they require that older-aged stands, or specific patches of primary habitat be maintained within the short rotation forest."

The predicted occurrence of seral stage proportions on BLM-administered forest lands (Appendix E) was calculated using the allowable cut runs and district inventory data. In an attempt to place BLM plans in perspective, the predicted seral stage abundance in the entire EIS area (as defined in Chapter 2, Animals) was also estimated by applying extremely rough projections of harvest levels (by ownership) on all these lands over the first 10 decades (see Appendix D).

Terrestrial Vertebrates Transportation System

Road construction would eliminate vegetation from the roadbed. The acreage would vary (see Table 1-1) depending on the alternative selected. Currently about 6,000 acres have been cleared for roads. The added impacts of habitat elimination would be adverse and perpetual since most road systems would be maintained indefinitely. Increased mortality due to collisions with vehicles is unpredictable but probably insignificant.

Harassment of wildlife, especially elk, by increased human intrusion would occur and during stress situations, such as times of temperature extremes, would adversely affect the animal's physiological mechanisms and mortality could occur (Starkey, deCalesta and Witmer 1982). New miles of roads mean more access by hunters and increased harvest and harassment is probable. Legal harvest

can be limited by regulations adopted by the Oregon Fish and Wildlife Commission but an increase in poaching is probable. This could lead to depressed deer and elk populations in local areas. Examples of other species that are sensitive to human intrusion are black bear, mountain lion, bobcat and great blue heron.

The proposed action and all alternatives, except 1 and 2, contain recommendations to close some roads in order to reduce harassment and poaching. Once roads are effectively closed to use, elk use increases to near normal levels.

Lyon (1979) and Perry and Overly (1977) have shown that elk use is reduced within one-half mile of roads open to human travel. This reduced use varies with terrain, cover, distance and other factors, so an accurate quantification is possible only on a site-specific basis. However, it is estimated that reduced elk use would range from a high of 56,000 acres in Alternative 1 to 43,000 acres in Alternative 10. The reduction in habitat use must be considered adverse. Effects of roads on deer were "variable and relatively insignificant" (Perry and Overly 1977, p.34).

Timber Harvest

The greatest effect timber harvest would have on terrestrial vertebrates during the first decade would be the modification of habitat by clearcutting. The amounts range from 44,838 acres in Alternative 1 to 16,433 acres in Alternative 10 (see Table 1-1). The removal of mature and old-growth stands eliminates the habitat of those species of animals adapted to exist there. If similar unoccupied habitat exists nearby, then those displaced individuals could occupy them. It is

unlikely that such a situation exists however, and it is assumed that habitats are currently at carrying capacity, except those for Roosevelt elk.

The results of the mature and old growth analysis described in Chapter 2, Wildlife, are displayed in Table 3-9. This table shows that, over the long term, only Alternatives 9 and 10 will provide mature and old-growth forests in sufficient amounts (see Table 3-10) and location to maintain minimum viable populations of those animal species dependent on those habitats. If any alternative other than 9 or 10 is selected, the long-term impacts will be adverse. Only Alternatives 5, 8, 9 and 10 would provide habitat blocks closer together than currently exists. If Alternative 5 or 8 were adopted, there would not be enough habitat (34 percent large block, 45 percent small block) to support minimum viable populations in the long-term.

The analysis of seral stage proportion on all lands in the EIS area (see Chapter 2, Animals) shows old growth and mature forests would decline in all alternatives (Appendix D). In the long term, all old-growth timber remaining in the EIS area would be on Federal lands administered by BLM and U.S. Forest Service. With this reduction of old-growth habitat, a related reduction of old-growth-dwelling populations is probable. Analysis of the sample 5-year timber sale plan indicates approximately 2,500 acres of elk survival cover would be harvested.

In Alternatives 1 through 9, increases occur in pole/sapling and young second growth and associated animal populations would have corresponding changes (see Appendices D and E).

Table 3-9 Mature and Old Growth Analysis¹ (Long Term)

	Large Block (Percent) ²	Small Block (Percent) ²	Geographic Ties (Percent) ²	E-W Block ³
Existing Situation	118	164	120	20 miles
Alternative 1	4	30	7	>50 miles
Alternative 2	4	30	7	>50 miles
Alternative 3 ⁴	44	44	55	>23 miles
Alternative 4	15	33	25	24 miles
Alternative 5	34	45	34	7 miles
Alternative 6	0	0	7	>50 miles
Alternative 7	44	44	55	23 miles
Alternative 8	34	45	34	7 miles
Alternative 9	93	102	93	16 miles
Alternative 10	163	127	145	14 miles

¹ See Chapter 2, Wildlife, for explanation.

² 100 percent would provide the minimum for maintaining viable populations of animal species requiring mature and old-growth habitats.

³ Distance in miles between large blocks for an East-West tie.

⁴ Assuming that acres deferred from harvest would not be returned to intensive timber base after the first decade; otherwise, figures would be similar to Alternative 2.

Table 3-10 Acres of Old Growth ¹ (196+) and Percent Change from Existing on BLM-Administered Lands Remaining at the End of Each Decade (Existing as of 1978; 48,400)

Date	Alt. 1 Max. Tbr. W/Dep.	Alt. 2 Max. Tbr.	Alt. 3 Det. Harvest ²	Alt. 4 S.S.D.	Alt. 5 E-W Corridor	Alt. 6 ³ No Action	Alt. 7 Proposed Action	Alt. 8 No Herb.	Alt. 9 ECO Mgmt.	Alt. 10 Max. ECO
1988	25,500 (-47%)	26,300 (-46%)	26,800 (-45%)	27,400 (-43%)	27,700 (-43%)	0	28,900 (-40%)	30,700 (-37%)	35,600 (-26%)	48,400 (0)
1998	5,700 (-88%)	5,700 (-88%)	8,000 (-83%)	11,900 (-75%)	12,900 (-73%)	0	17,400 (-64%)	14,700 (-70%)	30,600 (-37%)	50,500 (+ 4%)
2008	6,800 (-86%)	6,800 (-86%)	9,300 (-81%)	13,500 (-72%)	14,200 (-71%)	0	18,600 (-62%)	16,100 (-67%)	31,000 (-36%)	53,900 (+11%)
2018	6,800 (-86%)	6,800 (-86%)	9,300 (-81%)	13,500 (-72%)	14,200 (-71%)	0	17,900 (-63%)	16,100 (-67%)	30,300 (-37%)	54,000 (+12%)
2028	7,300 (-85%)	7,300 (-85%)	9,700 (-80%)	13,900 (-71%)	14,500 (-70%)	0	17,900 (-63%)	16,600 (-66%)	31,000 (-36%)	54,400 (+12%)
2038	7,900 (-84%)	7,900 (-84%)	10,400 (-79%)	14,600 (-70%)	14,900 (-69%)	0	18,000 (-63%)	17,200 (-65%)	33,100 (-32%)	55,200 (+14%)
2048	7,900 (-84%)	7,900 (-84%)	10,500 (-78%)	14,700 (-70%)	15,300 (-68%)	0	18,700 (-61%)	17,700 (-63%)	34,900 (-28%)	55,300 (+14%)
2058	7,900 (-84%)	7,900 (-84%)	10,600 (-78%)	14,900 (-69%)	15,800 (-67%)	0	19,300 (-60%)	18,600 (-62%)	39,500 (-18%)	55,600 (+15%)
2068	8,500 (-82%)	8,500 (-82%)	11,300 (-77%)	15,500 (-68%)	16,300 (-66%)	0	20,700 (-57%)	19,500 (-60%)	44,500 (- 8%)	56,500 (+17%)
2078	8,900 (-82%)	8,900 (-82%)	12,100 (-75%)	16,400 (-66%)	17,000 (-65%)	0	22,300 (-54%)	20,400 (-58%)	46,200 (- 5%)	57,000 (+18%)

Source: BLM allowable cut printout and district inventory

¹ Rounded to nearest 100 acres

² Figures assume that acres deferred during the first decade would remain in intensive timber production base.

³ Based on 1970 inventory.

Early successional stages (1-15 years) following harvest would benefit a few species adapted to highly simplified early seral stage habitats. The deer mouse and pocket gopher are some examples. The usefulness of this stage to wildlife would be limited by successive application of intensive timber management practices. The resulting forest is not a natural successional stage, but a very simplified one, lacking the structure, diversity and micro-habitats of natural stands (Thomas 1979; Starkey, deCalesta and Witner 1982; Harris 1982; Lang 1980b). Currently, (1978) there are about 64,400 acres of early (less than 15 years old) stage vegetation on BLM-administered timber lands of the SYUs. The changes in this habitat that would occur after the first decade are shown in Appendix F. For the most part, acreage changes in these stages are small but significant impacts are anticipated, except in Alternatives 9 and 10, because of increasing simplification by intensive timber management activities. For example (Harris et al. 1982) has shown that elimination of snags and down logs from short rotation forests can result in a 29 percent reduction in the number of species using that habitat. Where the changes are great, and reductions of these stages occur (Alternatives 9 and 10, 10th decade), it is assumed that the intermingled lands of private ownership will be managed in a manner that provides these younger stages.

In future decades, commercial thinning dramatically increases in all alternatives. Commercial thinning would occur in the pole/sapling and young second growth that account for the majority of habitat remaining at the end of 10 decades (see Table 1-1 for acreage to be thinned during the first decade).

Commercial thinning removes up to 40 percent of the basal area of the forest and has several effects on wildlife habitat. The structure of the forest

becomes more simplified and animal species diversity decreases. The stand is opened up and its value as thermal cover is reduced (Edgerton and McConnell 1976). Hiding cover is also reduced and forage may not increase, for as Edgerton (1972) pointed out, deer and elk use was less in partial cut areas (30 percent basal area removed) than in either clearcuts or unlogged stands. These alterations resulting from commercial thinning would result in lowered deer and elk populations in comparison to present day clearcut prescriptions.

Forest birds would be affected, for, as Franzreb and Ohmart (1978) show, thinning decreases habitat value for birds that forage by searching in the tree foliage or gleaning in timber. Species such as warblers, vireos and golden-crowned kinglets would be reduced, while ground feeders such as the junco may increase. Cooper's and sharp-shinned hawks use dense second-growth Douglas-fir as their primary nesting habitat (Reynolds 1971). The quality and quantity of this habitat would be reduced by commercial thinning and harvest in all alternatives except 9 and 10. Table 3-11 shows short- and long-term populations by alternative.

The skidding of logs during yarding destroys low vegetation, decayed logs and compacts the soil. The complete but temporary destruction of surface vegetation due to yarding (see Table 3-2) would reduce the amount of habitat for small rodents and insectivores. Ground disturbances that do not remove excessive topsoil may benefit local wildlife populations such as elk and deer, seed-eating birds and certain rodents that depend on early successional communities. Swanson (1970 Cited in Bunnell and Eastman 1976) reported significantly higher elk use on moderately or heavily disturbed sites than on lightly disturbed sites.

Snag-dependent wildlife such as woodpeckers and other cavity dwellers would be adversely affected due to snag removal during harvest operations. Based on the work of Thomas (1979), three snags of prescribed sizes per acre would provide for maximum populations of primary excavators. To manage primary excavators at the 60 percent level (considered a safe level) requires about two snags (of prescribed sizes) per acre be available. Most private lands are not routinely managed for cavity

users, therefore the habitat component maintained on BLM-managed lands is crucial to the survival of snag-dependent species in the SYUs. District surveys revealed that snags and/or wildlife trees are being provided at the rate of 0.04 per acre on recent harvest units.

Table 3-11 lists short term effects on cavity dwellers and as shown only Alternative 10 would maintain levels high enough to maintain viable

Table 3-11 Short and Long Term Impacts to Selected Species or Habitats

Species or Habitat	Current Level	Long Term										Remarks
		1	2	3	4	5	6	7	8	9	10	
		EFD	Max.Tbr.	Def.Har. ¹	S.S.D.	E-W Cor.	No Action	O.P.A.	No Herb.	Eco.	Full Eco.	
Populations												
Bald Eagles (pairs)	1	1-10	1-10	1-10	1-10	1-10	1-10	5-10	1-10	10	10	Nesting
Northern Spotted Owls (pairs)	36	0	0	19/0	1	12	0	19	12	41	54	300 acre habitat
Northern Spotted Owls (pairs)	27	0	0	12/0	1	8	0	12	8	27	41	1,000 acre habitat
Habitat												
Roosevelt Elk	N/A	-60%	-60%	-40/-60%	-60%	-45%	-75%	-40%	-30%	0%	10%	Change from Existing
Coopers and Sharp Shinned Hawk	50%	0%	0%	15%/0	2%	10%	0%	15%	10%	70%	85%	Percent of Potential
Cavity Users	34%	1%	1%	17%/4%	10%	15%	1%	19%	15%	75%	85%	Percent of Potential
Hardwood	90%	9%	9%	28%/20%	21%	22%	8%	28%	90%	100%	100%	Percent of Potential
Riparian	60%	3%	3%	55%/40%	45%	48%	3%	55%	48%	100%	100%	Value Index
Old Growth	N/A	-82%	-82%	-66/-75%	-65%	-66%	-100%	-54%	-58%	-5%	18%	Change from Existing
Species or Habitat	Current Level	Short Term										Remarks
		1	2	3	4	5	6	7	8	9	10	
		EFD	Max.Tbr.	Def.Har.	S.S.D.	E-W Cor.	No Action	No O.P.A.	Herb.	Full Eco.	Eco.	
Bald Eagles (pairs)	1	1	1	1	1	1	1	1	1	2	2	Nesting
Northern Spotted Owls (pairs)	36	0-9	0-9	19	1-9	13	0-5	19	13	29	35	300 acre habitat
Northern Spotted Owls (pairs)	27	0-4	0-4	10	1-4	7	0-2	10	7	26	29	1,000 acre habitat
Habitat												
Roosevelt Elk ²	N/A	-40%	-40%	-35%	-35%	-30%	-45%	-20%	-25%	+5%	+10%	Change from Existing
Coopers and Sharp Shinned Hawk	50%	5%	5%	11%	5%	10%	1%	11%	10%	57%	60%	Percent of Potential
Cavity Users	34%	13%	13%	18%	14%	17%	4%	18%	17%	36%	41%	Percent of Potential
Hardwood	90%	64%	65%	65%	66%	67%	69%	68%	77%	95%	95%	Percent of Potential
Riparian	60%	23%	24%	37%	37%	38%	8%	39%	38%	65%	65%	Value Index
Old Growth	N/A	-47%	-46%	-45%	-43%	-43%	-100%	-40%	-37%	-26%	0	Change from Existing

¹ Long-term impacts for Alternative 3 reflect two differing assumptions, pending the decision on status of deferred acres after the first decade: Deferred acres withdrawn from intensive base / Deferred acres retained in intensive base.

² Percentages apply directly to BLM habitat in the Siuslaw River area.

Table 3-12 Long-Term Snag Density

Alt.	Percent Management Level	Snag Distribution
1	1	Would not occur on 98 percent of land base; adequate on 2 percent of land base
2	1	Would not occur on 98 percent of land base; adequate on 2 percent of land base
3 ¹	17/4	Would not occur on 80/98 percent of land base; adequate on 20/2 percent of land base
4	10	Would not occur on 88 percent of land base; adequate on 12 percent of land base
5	15	Would not occur on 84 percent of land base;adequate on 16 percent of land base
6	1	Would not occur on 98 percent of land base;adequate on 2 percent of land base
7	19	Would not occur on 80 percent of land base;adequate on 20 percent of land base
8	15	Would not occur on 83 percent of land base;adequate on 17 percent of land base
9	75	Would not occur on 4 percent of land base;adequate on 96 percent of land base
10	85	Would not occur on 4 percent of land base; adequate on 96 percent of land base

¹ Long-term impacts for Alternative 3 reflect two differing assumptions, pending the decision on status of deferred acres after the first decade: Deferred acres withdrawn from intensive base / Deferred acres retained in intensive base.

populations. Table 3-12 was developed to describe expected long-term snag densities on the BLM-administered land base.

As can be seen from Table 3-12, only Alternatives 9 and 10 would reach the 60 percent management level. To provide maximum wildlife benefits, snags should approach an even distribution throughout the land base. Alternatives 9 and 10 are the only ones that would approach even distribution.

For all alternatives except 9 and 10 snag-dwelling species would decline far below BLM target levels in the long term (see Table 3-10). This would be a significant adverse impact as populations would fall well below self-sustaining levels.

New snags are created by natural mortality in the forest. All alternatives would employ some amount of mortality salvage during the decade (see Table 1-1). The number of trees per acre, their age and size are variable and not predictable. While in general the impacts would not be immediately significant, these trees are the snags and down forage logs of the near future and removing them eliminates potential and needed habitats.

Wetland-riparian habitat is important as 83 percent of the terrestrial wildlife species in the area use it to some degree. The importance of this habitat is the result of many factors including cover, food,

water, edge and microclimate. The maintenance of its values depends on sustaining the structural integrity of the vegetation. Any alteration of its structure decreases its value to terrestrial wildlife. For most wetland-riparian areas, best practices for wildlife means no entry.

Alternatives 9 and 10 provide optimum protection to all small first and second order streams and transition zones associated with them. Up to approximately 41,000 acres of this habitat (first and second order streams) could be modified and replaced by younger vegetation if any alternative except Alternatives 9 and 10 were selected. Riparian vegetation on third order and larger streams would be logged in Alternatives 1, 2 and 6, as would the transition zone on third order and larger streams in Alternatives 4, 5, 7, and 8. The impacts to riparian habitat are shown in Table 3-11. If any alternative but 9 or 10 is selected, the impacts would be adverse.

The significance of this disturbance is amplified as "Habitat alteration [in riparian habitats] will affect wildlife far more than indicated by the proportion of the total area disturbed." (Thomas 1979)

Much of the upland hardwood habitat is in small acreages mixed within softwood stands. Harvest is often incidental, but regardless, this habitat is being eliminated at the rate of about 8,000 acres

per decade (BLM District Personnel). As pointed out in Chapter 2, this habitat is used by 13 animal species as optimum. Table 3-11 shows impacts to this habitat type by alternative.

Food supplies for grazers and browsers are more readily available in the early successional stages as compared with other successional stages. Deer and elk use would increase and peak 6 to 8 years following clearcutting (Harper 1969; Crouch 1974). However, the food supply may not be utilized if sufficient hiding or escape cover is not nearby. For optimum big game use, clearcuts should not exceed 40 acres. In the sample 5-year timber sale plan, 79 of the 560 sale units would exceed 40 acres in size. The size ranges from 2 to 69 acres, but averages 31 acres. Clearcut size is only part of the mechanism necessary to provide cover near feeding areas. The other is to allow regrowth to provide cover (about 10 years) prior to clearcutting on adjacent lands. Without this timing, the forage created may not be utilized as no cover is available. Only Alternatives 9 and 10 make allowances for the time between adjacent clearcuts. If any other alternative is selected, utilization of forage may be restricted.

Other Timber Management Treatments

Other treatments (Table 1-1) alter animal habitat through vegetative manipulation.

Slash burning would eliminate most live vegetation from the site and 80 to 90 percent of the combustible material less than 3 inches in diameter would be consumed. Larger material is generally charred in place. Table 1-1 lists acres to be burned for all alternatives. These effects vary with the intensity of the burn, but immediate impacts would be removal of vegetation and associated animal populations. This would last less than one growing season, after which a vigorous growth of grasses and forbs would appear and animal populations adapted to early successional stage vegetation would be re-established. However all areas to be slash burned are cleared of snags to preclude spread of wildfire. This is an adverse impact to snag-dwelling species (Thomas 1979).

The removal of deep concentrations of logging slash reduces obstructions to deer (Crouch 1974). The removal of large logs, however, eliminates habitat for many other species (Thomas 1979). Charring of the larger material also damages habitat by removing bark and eliminating micro-habitats for invertebrates that are an important item in the food chain (Thomas 1979). The resulting habitats, therefore, lack structure that logs and other debris provides and are more simplified.

Use of prescribed fire can enhance big game habitat. Harper (1969) reported higher Roosevelt

elk use on logging sites that had been burned than on those that had not been burned, and explains that on burned sites grasses were more than three times as abundant. Grasses are a preferred food item of elk. He warned, however, that slash burning would not necessarily increase forage and subsequent elk use on all sites as physical characteristics make each site different in its response to burning. Also, Crouch (1974) indicated that slash burning increased the food supply for black-tailed deer.

Mechanical piling of slash would cause soil disturbance and have impacts similar to those caused by yarding. Piling removes downed slash that may cause barriers to large ungulates but can result in large barriers if windrowed.

All alternatives except 8 call for herbicide use in site preparation and conifer release during the decade. The impacts from herbicide use in all alternatives except Alternative 8 are the same, only the magnitude changes. (See Table 1-2 for acres treated.)

There are four major types of impacts to animals that could be associated with silvicultural herbicide application: exposure to acute toxic levels, exposure to chronic toxic levels, habitat modification and carrier impacts. The following is a brief discussion of these four impacts. Additional information may be obtained from BLM's FEIS on Vegetation Management with Herbicides: Western Oregon (USDI, BLM 1978).

Newton and Norris (1968) sampled blacktail deer taken from treated sites (2,4,5-T and Atrazine), and were unable to detect residues in most tissues. One animal was found to have a trace in the liver. In a study by the manufacturer, goats given 0.2 mg triclopyr/kg daily for 10 days were found to have tissue residues above the detection limit of 0.003 ppm in only the liver (0.004 ppm) and kidney (0.013 ppm).

According to Dost (1983), if an assumption of feed intake by deer at three percent of body weight per day is taken, at the hypothetical maximum of 400 ppm of herbicide in browse, intake will be 30 grams feed/kg or 12 mg herbicide/kg. In the goat study the maximum concentration in muscle was between zero and 0.003 ppm, and will be taken as 0.003 ppm. Studies in other species show that tissue concentration is proportional to dose rate. The proportional concentration in the animal's muscle would be 0.18 ppm (0.18 mg/kg), and 0.24 ppm (0.24 mg/kg) and 0.78 ppm (0.78 mg/kg) in the liver and kidney, respectively. To acquire these dosage levels, an animal would have to forage in freshly treated areas for ten consecutive days providing there would be no chemical breakdown or deterioration. Therefore, the potential for wildlife to suffer acute or chronic toxic effects is unlikely at proposed herbicide use rates.

Herbicides have pronounced impacts on wildlife habitat (Lang 1980b). These impacts are brought about by losses of habitat diversity and stratification resulting from the reduction of certain plants that are in competition with the desired coniferous species. This would adversely impact those animals that utilize the treated grass/forb and shrub/seedling seral stages.

Diesel oil is sometimes used as a carrier for forest herbicides. Data on the toxicity of diesel oil on wildlife are limited; however, some work has been done on the adverse effects on adult ducks (Tucker and Crabtree 1970; Hartung 1966; Hartung 1965). It is unlikely that wild animals would consume lethal amounts of the carrier because of the dilution factors involved. It may, however, adversely affect the palatability of the forage. Other potential impacts include the coating of eggs, thereby affecting their hatchability, and the wetting of individuals, making them more susceptible to other environmental stresses. However, data are insufficient to predict the impacts of diesel oil carrier on animals in the EIS area.

Precommercial thinning also has pronounced impacts on wildlife habitat (Lang 1980b). Although it may open a young forest canopy, generally does not benefit deer and elk because the unremoved slash impedes movements. The obstacle presented by slash accumulations restricts deer and elk from utilizing any forage increases which result from the thinnings. Cover use is also restricted by slash accumulations. Therefore, reduced deer and elk use would occur on those acres precommercially thinned (see Table 1-1). This condition could last several years before decomposition removed the obstacles.

Conversely, birds and small mammals may increase their use of an area following precommercial thinning. Slash accumulations provide cover for them and any increases in forage production can be utilized. However, precommercial thinning combined with commercial thinning will, in the long term, essentially eliminate populations of Cooper's and sharp-shinned hawks in all alternatives except 9 and 10.

Fertilization increases the growth and palatability of many plant species. These increases may be utilized by wildlife which would be a short-term positive impact.

Fish

Impacts of timber management on fish and aquatic habitat fall into the broad categories of increased accumulation of bottom sediments, increased amounts of suspended sediments, altered amounts of stream flow, introduction of logging debris, change of water temperature, destabilization of banks and channels, reduction of instream structure and lower productivity.

The impacts from the 10 alternatives differ primarily in magnitude. These differences reflect the acres of land treated, miles of road built and presence and size of buffers. For instance, Alternative 10 has the fewest miles constructed, while Alternatives 1, 2 and 9 have the most miles of road constructed. (See Table 1-1 for all treatments.)

On lands administered by BLM in the SYUs, there are approximately 390 miles of streams that support cold water fish (see Table 2-9). Analysis of the sample 5-year timber sale plan shows that approximately 40 miles of stream that support cold water fish pass through or are adjacent to 167 harvest units.

The habitat of aquatic invertebrates, which are important both as food for fish and as indicators of stream quality, can also be modified or destroyed by the same factors that affect fish habitat. It is assumed that impacts to most invertebrates would be similar to those experienced by fish in localized areas. Research by Erman et al. (1977) revealed that when buffer strips of at least 30 meters (about 98 feet) width on each side were maintained, the macro-invertebrate populations were indistinguishable from those of unlogged streams in the first few years following timber harvest.

Maintenance of buffers helps minimize stream degradation. Alternatives 1 and 2 have no provisions for buffer strips except for standards of the Oregon Forest Practices Act and stream productivity might be adversely affected.

Initial impacts on aquatic habitat are a result of surface disturbance, channel disturbance and land treatment, leading to increased erosion and channel instability. Where buffers are maintained, erosion and subsequent decline in water quality are minimized. If the larger trees, over 100 feet in length, are removed from the buffer, the overall quality of habitat will decline even when hardwood buffers protect water quality. Woody material provides a major source of habitat diversity and spawning areas, forming pools and cover, and trapping gravels that are used for spawning and food production. When larger trees are removed, the woody structure in the stream is reduced as large woody material moves out of the system and is not replaced. This leads to a decline in productive capability of the stream. The results in a basin tend to be cumulative through time as larger areas are harvested. Shifting to a shorter term rotation does not permit streamside trees to reach sufficient size to provide woody structures in all stream orders unless retained, such as in Alternatives 9 and 10. Some benefits would be provided by maintaining buffers on all third order and larger streams in Alternatives 3, 4, 5, 7, and 8.

Chapter 3, Impacts on Water Resources, provides data on expected amounts of sediments and water that would reach the streams of the SYUs. Many of

the analyses and conclusions appearing in this section are based on those data.

Transportation System

The construction of roads can add greatly to the sediment load of a river. In Alternatives 1, 2, 3, 4, 7, 8 and 9 road building during the decade would be more than in the past decade; however, sedimentation from road building would be increased significantly in only Alternatives 1 and 2 (see Table 3-6).

In discussing impacts to the aquatic invertebrates, Erman et al. (1977) suggest that repeated failure of road crossings was the cause of disruption of the stream biota, not the construction of road crossings. Investigations in the vicinity of newly installed culverts showed only a slight impact.

Three new roads identified in the sample 5-year timber sale plan would cross streams with fishery values. All are on stable soils so only short-term localized impacts are expected.

Timber Harvest

Timber harvest can have an adverse impact on fish habitat by removing the riparian zone, changing water yield and increasing sedimentation.

Removing the riparian zone, including old-growth conifers, would increase the amount of fine organic material, reduce the number and quality of pools, reduce useable spawning gravels, reduce macro-invertebrate production areas, destabilize banks and channels, and increase water velocities. Logging riparian zones would also increase siltation of stream bottoms and change temperature regimes by decreasing shade. However, where streamside buffers are retained, no change in temperature was observed (Brown and Krygier 1970). Water temperatures would not increase if Alternatives 3, 4, 5, 7, 8, 9, or 10 were selected. Alternatives 1, 2, and 6 make minimal provision for riparian buffers and water temperatures would increase. These increases are not quantified but impacts are expected to be adverse.

Clearcutting increases water yield (see Impacts on Water Resources), which could have a scouring effect on stream bottoms, thereby removing gravel and aquatic vegetation. Based on the analysis described in Chapter 3, it is estimated that water yield changes would have a negligible impact to the SYUs as a whole.

Harvest and yarding could contribute considerable sediment to local streams. Increases in bottom sediments, according to Gibbons and Salo (1973), cause the most damage of all factors affecting aquatic life. The amount of sedimentation would depend on the alternative selected. Alternatives 1 to 3 would result in increases compared to past

activities; Alternatives 4 to 10 would decrease sedimentation (see Table 3-6).

Other Timber Management Treatments

Burning, animal damage control, precommercial thinning and fertilization are not expected to have a significant impact on fish.

The chemicals proposed for use for vegetation control and the levels of their application are not expected to measurably affect aquatic vegetation. Streamside vegetation that provides shade could be altered. Buffer strips along streams should prevent this from occurring. However, due to applicator error, some parts of these buffer strip may receive applications, and some detectable amounts may reach the stream.

Toxic effects of herbicides on fish have been documented in the laboratory (U.S. EPA 1977). However, proposed field application rates would be considerably less than the minimum lethal dose for those species tested and toxic effects are not expected. (See BLM's FEIS Vegetation Management with Herbicides, Western Oregon 1978 through 1987, for more detailed information.) It should be noted that long-term effects, particularly under field conditions, are more difficult to determine than are effects in short-term laboratory tests. Also, Cameron and Anderson (1977) felt that more study use was needed in order to evaluate the impacts to aquatic plants and animals under field conditions. However, Cameron and Anderson's monitoring program in 1977 and Anderson's monitoring in 1979 showed that amounts of herbicides in streams did not exceed EPA's "safe" level standards.

Table 3-13 estimates change in cold water fish populations based on water quality and structural habitat.

Threatened and Endangered Animals

Threatened and endangered species receive special attention under the Endangered Species Act of 1973. Known nest and roost sites of these species are avoided and special precautions taken to ensure their well being (Chapter 1, Forest Management Treatments and Design Elements). No adverse impacts are expected to occur to these existing sites.

Transportation System

Threatened or endangered species would probably be affected only to the extent that road construction could open previously inaccessible areas. This impact cannot be quantified or qualified.

Table 3-13 Changes¹ in Coldwater Fish Populations (Percent)

	Alternatives									
	1	2	3 ²	4	5	6	7	8	9	10
1st Decade	-10	-10	+10	+10	+10	+10	+10	+10	+20	+20
10th Decade	-30	-30	+25/-30	+25	+25	+10	+25	+25	+50	+50

¹ Change from existing

² Long-term impacts for Alternative 3 reflect two differing assumptions, pending the decision on status of deferred acres after the first decade. Deferred acres withdrawn from intensive base / Deferred acres retained in intensive base.

Source: BLM District and State Office personnel

Timber Harvest

No alternative nest sites for bald eagles are provided for in Alternative 6. In the short term, it is possible that the existing nest site may be destroyed by natural events and in the long term it is probable (see Table 3-11).

Twenty-three potential bald eagle nest and roost sites have been identified on the Eugene District in cooperation with the bald eagle recovery team (USFWS). The locations of these sites are incorporated in the Draft Pacific Bald Eagle Recovery Plan. Only Alternatives 9 and 10 completely protect these potential sites. In all alternatives except 6, each of the 23 identified sites not already protected by other allocations would be deferred from harvest for five years, pending completion of the Final Pacific Bald Eagle Recovery Plan. Depending on provisions of the final plan, some potential sites may be scheduled for harvest during the latter part of the decade. This would have an adverse impact on opportunities for the bald eagle population to expand in Alternatives 1 to 8.

Habitat modifications caused by clearcutting would have major impacts on old growth-dwelling species. The northern spotted owl, a State-listed species, is dependent on old-growth closed-canopy forests and would be greatly affected (Forsman et al. 1982)

The original Oregon Endangered Species Task Force management recommendations for each pair of owls (in effect during the preparation of the proposed MFP), called for total protection of 300 acres of old-growth core area (if available) and an additional 900 acres to be managed to provide at least 50 percent of the acreage in stands of 30-year-old, or older, forests. Currently 36 pair occupy habitat that meet this criterion. Assuming that these recommendations identify minimum essential habitat, Tables 3-11 and 3-14 indicates the pairs of owls expected to be remaining after 1 and 10 decades.

Examination of the sample 5-year timber sale plan reveals planned harvest units would adversely

impact the habitat of 32 of the 42 pairs inventoried during the last decade.

A revision of Task Force recommendations (Forsman et al. 1982) has resulted from recent data. The revision recommends that forests be managed to provide 1,000 acres of old growth per pair of owls within 1.5 mile radius of nest sites. Currently, 27 pairs occupy habitat that meets this criterion. The analysis of the relationship of the alternatives to spotted owl habitat found in Table 3-14 is based on the assumption that the revised recommendations identify minimum essential habitat.

Conclusions

With the exception of Alternatives 9 and 10, both the short- and long-term changes that occur in habitat diversity and reduction of old growth would have an adverse impact to wildlife in general and old-growth-related species in particular. Alternatives 1, 2 and 6 drastically reduce mature and old growth habitat and selection of one of those alternatives would have adverse impacts. In addition, intensive forest practices would lead to even age stands of predominately Douglas-fir that would greatly reduce habitat diversity and adversely impact wildlife.

Simplification of forest habitats would also have a great effect on wildlife. Pole sapling and young second growth (which would account for most of the forests, except in Alternative 10,) have low environmental variables (simple structure) even under natural conditions. Further loss of structure from thinning would make these age classes of very low value for most wildlife. Further simplification resulting from broadcast burning and herbicides would add to the loss of diversity. This long-term simplification and loss of diversity would be adverse.

Snag-dependent wildlife, possibly already below viable levels, would decline even further if any alternative but 9 or 10 were selected.

Riparian habitat occupies about 5 percent of the forest land base and is used by 83 percent of the

Table 3-14 Northern Spotted Owl Habitat Remaining After One and Ten Decades (Pairs Supported)

Alternative	1st Decade		10th Decade	
	300 Acre Criteria	1,000 Acre Criteria	300 Acre Criteria	1,000 Acre Criteria
1	0-9	0-4	0	0
2	0-9	0-4	0	0
3 ¹	19	10	19/0	12/0
4	1-9	1-4	1	1
5	13	7	12	8
6	0-5	0-2	0	0
7	19	10	19	12
8	13	7	12	8
9	29	26	41	27
10	35	29	54	41

¹ Long-term impacts for Alternative 3 reflect two differing assumptions, pending the decision on status of deferred acres after the first decade: Deferred acres withdrawn from intensive base / Deferred acres retained in intensive base.

Table 3-15 Estimated Elk Habitat Changes (from existing) on BLM-administered Lands (Percent) in the Siuslaw River Area (between Alma and Austa).

Alternative	1st Decade	2nd Decade	5th Decade	10th Decade
1	-40	-60	-85	-60
2	-40	-60	-85	-60
3 ¹	-35	-45/-60	-50/-85	-40/-60
4	-35	-55	-85	-60
5	-30	-45	-65	-45
6	-45	-75	-85	-75
7	-20	-30	-45	-40
8	-25	-40	-50	-30
9	+ 5	0	-10	0
10	+10	+10	0	+10

Source: BLM District personnel

¹ Long-term impacts for Alternative 3 reflect two differing assumptions, pending the decision on status of deferred acres after the first decade: Deferred acres withdrawn from intensive base / Deferred acres retained in intensive base.

terrestrial wildlife species. This crucial habitat would be adversely impacted if any alternative but 9 or 10 were selected. Impacts would be severe if Alternatives 1, 2, or 6 were chosen.

Habitat removed by road construction would be permanently and irretrievably lost on those roads proposed as part of the permanent road system. The construction of new roads would lead to harassment of wildlife and reduce useable elk and large carnivore habitat within one-half mile of these roads. Planned road closures would reduce this impact.

Deer numbers are not expected to be greatly modified by any of the alternatives in the short term, but once a high proportion of the land base develops into second-growth stands, populations

may be reduced. However, because of different requirements, elk habitat would be greatly reduced by many of the alternatives. The changes would be due to changing habitat conditions, new road construction, thinning and other habitat modifiers. Table 3-15 shows estimated changes in habitat as affected by cover and forage. Further reductions would be expected due to roading and unfavorable juxtaposition of forage and cover areas (Lantz 1983).

Cold water fish populations are expected to decline in the short-term if Alternative 1 or 2 were selected. Increases are expected if any other alternative is chosen (see Table 3-13).

The bald eagle (Federal listed as Threatened) would be not adversely impacted under any alternative.

The northern spotted owl is the only species listed by the State of Oregon as threatened that would be adversely impacted. The original recommendations of the Oregon Endangered Species Task Force were considered in formulating alternatives for this EIS. Assuming that these recommendations identify minimum essential habitat, only Alternatives 9 and 10 would protect habitat of enough owls to meet recommended levels, although Alternatives 7 and 8 are close. A recent revision of the Task Force recommendations indicates that minimum habitat requirements may be greater. If so, Alternatives 9 and 10 would provide habitat for 27 and 41 pairs, respectively (see Table 3-14).

In all of western Oregon the combined BLM timber management decisions for Medford and Coos Bay districts and the new preferred alternatives for the Eugene, Roseburg and Salem districts would come close to meeting the original Oregon Endangered Species Task Force recommendation for protection of the northern spotted owl. At the end of the first decade it is expected that all western Oregon BLM districts combined would maintain at least 90 pairs of owls, resulting from allocations made in land use plans and harvest scheduling.

Cumulative adverse impacts are expected to be minimal in the short term. Habitat for an estimated 78 of the recommended 90 pairs would be provided long-term protection through the land use planning process. In the long term a BLM shortfall in providing the recommended portion of owl pairs may result in a significant adverse impact to the species, unless the unmet needs were reapportioned by the Oregon Endangered Species Task Force.

Impacts on Recreation

Each alternative varies in approach and emphasis on meeting recreational needs. Some localized recreational demand would not be met if areas and facilities are not provided. The provision of areas and facilities for recreational pursuits would be beneficial since opportunities would be available to meet increasing demand.

The alternatives provide for varying degrees of protection, use and maintenance of existing recreation sites. Generally, Alternatives 1, 2 and 6 have minimal or no provisions to preserve opportunities for additional recreation site development. Alternatives 3, 4, 5, 7, 8, 9 and 10 allow for the protection of recreation development opportunities. Assuming these developments are realized, these alternatives would adequately meet increasing demand on public lands related to such activities as camping, picnicking, hiking, horseback riding, swimming and water-oriented use.

The impacts of timber management on recreation are also related to changes in the physical setting.

From the setting, recreationists derive different satisfactions, experiences and benefits. As changes in the setting affect experiences, levels and patterns of visitor use change. For example, in one area recreation use might be facilitated by road construction. In another area, visitation may show a long-term decline if the area's setting or resource availability is significantly altered. Some visitors may relocate to other areas where opportunities for desired experiences exist.

As natural or natural-appearing environments are altered due to timber harvest, opportunities related to appreciation of the natural environment are reduced. Opportunities for such activities as camping, hiking, fishing, hunting, nature study and sightseeing would be degraded in some areas. The degree and magnitude of impact would be dependent upon the level of intensive timber management under each alternative.

Clearcutting can also enhance certain recreational activities such as hunting, collecting, berry picking, general sightseeing, picnicking and using ORVs by creating areas, improving access or providing openings for scenic views. The impacts of clearcutting would be most significant under Alternative 1 and least under Alternative 10.

Many timber management activities create noise, odors, dust, fumes and additional traffic. Some recreation opportunities would be degraded by these factors. However, many road-oriented dispersed recreationists indicate that impacts of timber management do not detract from their enjoyment of an area (Downing and Clark 1979).

Area-wide impacts to fishing and hunting success are dependent upon impacts to the species (see Impacts on Animals). In the short term, demand for hunting would be met under all alternatives. In the long term, significant elk population decreases under all alternatives except Alternative 10 (see Table 3-15) would lead to decreased elk hunting success and a corresponding reduction in hunter use. Declining fish populations under Alternatives 1 and 2 would result in a similar reduction in fishing success and related angler use (see Impacts to Animals, Conclusion). Decreased hunting and fishing success could result in a relocation of these recreationists to other areas, if available, with better opportunities for success.

Analysis of the sample 5-year timber sale plan indicates that some reductions or increases in visitor use could occur at specific sites. Logging activity near some overnight and day use facilities may create adverse visual and audible impacts which would degrade the recreation experience for some facility users. Accessibility for dispersed recreation dependent on vehicular access would be improved as a result of new road construction. Harvest units in areas offering off-road vehicle opportunities would not create significant adverse

impacts but could result in slight increases in visitor use at these areas.

Under Alternatives 1, 2, 4, 5 and 6 timber harvest would likely create impacts to sightseeing opportunities at Teeter Creek Springs and Blachly Wayside and to semi-primitive recreation values at Windy Peak. Under Alternatives 3, 7 and 8, impacts could occur at Blachly Wayside and Windy Peak. Under Alternatives 9 and 10, these areas would be protected.

Environmental assessments which precede each timber sale will provide a site-specific analysis of the potential impacts identified during the analysis of the sample 5-year timber sale plan.

Impacts to the potential Siuslaw National wild, scenic or recreational river will be further analyzed in the environmental assessments which precede each timber sale. If it is determined during site specific analysis that timber management actions could adversely affect potential suitability of that section of the Siuslaw River as a component of the National Wild and Scenic Rivers System, BLM would consult with the National Park Service to develop appropriate mitigation measures. There are six timber sales in the sample 5-year timber sale plan within one-quarter mile of this river.

Conclusions

Visitor use increases or reductions may occur in certain areas as a result of impacts to specific recreation experiences. Alternatives 1, 2, and 6 would serve to adequately meet increasing demand for motorized recreational vehicle use and some dispersed use areas. However, under these alternatives, demand associated with many other activities (e.g., hunting, fishing, watersport areas and developed site use) would not be met due to a loss of development opportunities, degradation of the desired recreation experience and effects on recreation-related wildlife populations.

Alternatives 3, 4, 5, 7, 8, 9 and 10 would serve to meet most recreational needs. Under Alternatives 1 and 2 declining fish populations would result in a lower fishing success and some decrease in related angler use. A lower desirability of BLM-administered lands for fishing would occur.

Impacts on Cultural Resources

Complete area-wide field surveys of the SYUs to identify cultural sites have not been undertaken. However, complete cultural resource surveys will precede each specific timber management action that would result in ground disturbance or transfer of title (BLM Manual 8100, Cultural Resource

Management). Under all alternatives, sites identified during these surveys would be protected in accordance with the National Historic Preservation Act of 1966 and Executive Order 11593, as stated in the Code of Federal Regulations (36 CFR Part 800).

Cultural resources not identified by intensive field survey could be inadvertently impacted under all alternatives. The potential for damage would be a function of the alternative's timber harvest level. Adverse impacts to such sites could occur through soil compaction, soil movement and/or chemical alteration by fire or mixing of organic matter. The potential for damage from timber management activity to undiscovered sites would be greatest under Alternative 1 and least under Alternative 10. In a worst case, impacts would completely obliterate a site's remains.

Road construction would provide additional access to known cultural sites, resulting in increased visitation. Vandalism, theft and site erosion could result. Esthetic, recreational, interpretive and educational qualities of the sites could be degraded. Road construction and/or timber removal on slopes above sites could result in increased rates of erosion and soil slumpage onto sites. These adverse impacts would be most likely under Alternatives 1, 2 and 9 and least likely under Alternative 10.

The landscape and vegetation surrounding a cultural site which compose its visual setting may be impacted by timber harvesting and road construction. Such impacts could reduce the site's esthetic appeal for recreation, interpretation and education. Impacts to the visual settings of cultural sites would be most likely under Alternative 1 and least likely under Alternative 10. Site-specific analyses of sales will be included in the environmental assessments which precede each timber management action. Should potential impacts to a site's setting integrity be identified, design art techniques and other constraints may serve to mitigate adverse impacts.

Conclusions

Appropriate measures would be taken to identify and protect cultural sites prior to ground-disturbing activities under all alternatives. Undiscovered cultural sites would be susceptible to damage from artifact breakage or destruction, displacement of materials and contamination of organic matter. Once a site is found, however, mitigation measures would be taken to minimize or avoid future damage. Under all alternatives, sites identified before logging would be managed to protect scientific and/or interpretive values.

Impacts on Visual Resources

Most timber management practices disrupt the land surface, change vegetative patterns, alter species composition, and thereby create visible contrasts (see Glossary) in the landscape. Assessing contrast for a proposed activity can indicate the severity of impact and help identify mitigation measures to reduce the contrast and meet VRM class objectives for an area (BLM Manual 8440). Environmental assessments will address site-specific visual impacts and apply the Bureau's contrast rating system (see Glossary) to specific timber management actions. The severity of an impact on visual resources depends on such factors as landscape elements; location, number, size and shape of clearcut units; location and design of roads; yarding methods; amount and treatment of debris; and success of vegetative reestablishment in disturbed areas.

Visual resource management (VRM) classes (see Chapter 2) are based on an inventory and evaluation of the area's scenic quality, sensitivity and distance zone (see Glossary). During the land use planning process, VRM classes as described in Chapter 2 may be changed to resolve conflicts between visual and other resources (BLM Manual 8411) or to account for visual management feasibility based on intermingled land ownership patterns. Upgrading an area's recommended VRM class would provide adequate scenic value protection and result in beneficial impacts. Downgrading VRM classes increases the potential for adverse visual impacts. As an example, an area in the affected environment recommended as VRM Class II but subsequently managed as Class III or IV would receive less protection. Consequently, the long-term effect of downgrading might be to lower scenic quality in adjacent areas even though the Bureau's ability to affect an area's overall scenic quality is often limited by intermingled land ownership patterns (see Figure 1-1). In some

cases, the impacts of BLM timber management activities would be consistent with those on surrounding areas and would not create significant contrasts, but could tend to compound the degree of contrast by enlarging the scale of modification.

Table 3-16 gives total acreage for each VRM class by alternative. Under Alternatives 9 and 10 visual resource conditions (scenic quality) would improve. Adverse visual impacts in highly scenic and sensitive areas would not occur or would be mitigated. Adverse visual impacts under Alternatives 3, 4, 5, 7 and 8 would be moderate. Some highly scenic and/or sensitive areas would be protected. Attempts would be made to mitigate adverse impacts on all public lands. Protection would be afforded to Horse Rock Ridge, Elk Meadows and 300 acres in the McKenzie River corridor. Potential adverse impacts would be likely in viewsheds near waterfalls, the McKenzie River, Interstate 5, Dorena Reservoir, Cottage Grove, Triangle Lake, Highway 36 and Highway 126. To a lesser degree, impacts would also occur along some county roads, within some drainages and within the viewsheds of some rural residential areas.

Under Alternatives 1, 2 and 6 adverse visual impacts would be high. No protection would be provided for highly scenic and/or sensitive areas.

Analysis of the sample 5-year timber sale plan indicates that the potential for impacts due to clearcutting would be greatest in foreground-middleground areas with high scenic quality and high sensitivity. Following application of the contrast rating system, necessary mitigation measures would be identified. Depending upon VRM class objectives, possible mitigation measures under all alternatives except 1 include manipulating the size and shape of clearcut units, partial cutting, longer harvest cycles, screening with buffer strips, hydromulching road cuts and fills, complete debris disposal, replanting with a conifer mixture and other special techniques.

Table 3-16 VRM Classes (acres)

VRM Class	Affected ¹ Environment	Alternatives			
		1,2,6	3,4,5,7,8	9	10
I	117	0	270	270	270
II	42,000	0	0	37,350	119,250
III	78,068	0	300	81,900	0
IV	196,562	316,747	316,177	197,227	197,227
Total	316,747	316,747	316,747	316,747	316,747

¹ VRM class acreage as recommended through the visual resource inventory and evaluation of the existing environment (see Chapter 2).

The adverse visual impacts of herbicide use would go unmitigated and would occur under all alternatives except Alternative 8. In short term, vegetation sprayed with herbicides would create highly visible contrasts. In the long term, vegetative variety would be reduced as herbicides encourage conifers at the expense of other vegetation of high visual interest. Herbicides used on tall broadleaf species (madrone, oak, alder) cause long-term impacts of up to 20 years or until the dead vegetation is over-topped. Under all alternatives except 8, 9, and 10 the impacts of herbicide use would be greater than under the existing situation (see Impacts on Vegetation).

Impacts on Areas of Critical Environmental Concern

Area of Critical Environmental Concern (ACEC) designation would improve management focus and provide guidelines to help achieve protection of important and relevant resource values. The alternatives vary in levels of ACEC designation.

Under Alternatives 3, 4, 5, 7, 8, 9 and 10, no impacts would occur to those seven areas qualified for ACEC designation. Under Alternatives 1, 2 and 6, the Fox Hollow, Camas Swale and Mohawk areas may be adversely impacted if they are not designated as Research Natural Areas or do not receive other protective management.

Analysis of the sample 5-year timber sale plan indicates no sales would adversely impact those areas qualified for ACEC designation.

Impacts on Special Areas

Under Alternatives 3, 4, 5, 7, 8, 9 and 10, no impacts would occur to the four potential Research Natural Areas and three Environmental Education Areas. Under Alternatives 1, 2 and 6, the seven sites with natural or environmental education values may be adversely impacted if they do not receive protective management.

Analysis of the sample 5-year timber sale plan indicates that no sales would adversely impact those areas with known or suspected natural or environmental education values.

Impacts to Human Health

The possibility of human health being impacted by the use of herbicides is related to the toxicity of the herbicide, the likelihood of exposure and resulting dosage received (Norris 1975). While there are no chemicals that are non-toxic, a substance of moderate or high toxicity may represent no significant hazard if exposure is very low, just as a relatively non-toxic agent may be harmful if exposure is extensive and long term. Herbicides proposed for use in the SYUs are given in Table 1-2 and the herbicides toxicities and activities are given in Table 3-17.

In general, exposure of humans to herbicides can occur in two ways: directly, by occupational means, or indirectly by environmental means. The number of persons that could be affected by herbicide application in the EIS is very small. Planned application techniques have been shown to effectively reduce or prevent spray from drifting onto streams and water bodies. Posting of sprayed areas should effectively minimize involuntary exposure to forest users.

All herbicides proposed for use in the RSYUs are registered with the Environmental Protection Agency (EPA). Extensive studies of the absorption, distribution, metabolism and excretion of herbicides in animals have shown that herbicides and their metabolites are rapidly eliminated from tissues of most animals (including humans) and thus do not accumulate to harmful levels (Eligehausen et al. 1980, Lavy et al. 1982, Leng et al. 1982, Nash et al. 1982, Newton and Norris 1968, Norris et al. 1974, Sikka et al. 1977, and Wolfe 1976). There is no evidence of carcinogenic effects for any of the herbicides listed in Table 3-17. However, with respect to 2,4-D, Picloram, Glyphosate, Atrazine, and Fosamine, some additional direct data is needed to assure certitude. The laboratory dosages at which potential reproductive effects have been detected or at which carcinogenic and mutagenic effects have been sought are much greater in concentration and duration than any exposure that could occur in the forest as a result of vegetation control treatments. Because of the limited toxicity of the herbicides and the low potential for exposure, the likelihood of an adverse impact on human health is negligible.

Impacts on Economic Conditions

The socioeconomic impacts are presented here for two different bases as a means of differentiating between the effects of potential timber management programs on existing socioeconomic conditions and their effects on the conditions expected to occur if the current timber management program were continued. The program manager must know how future conditions would be affected if the program were changed. The public is generally most concerned with how future conditions would differ from existing conditions. The impacts are presented mainly in table form, as changes measured from the existing condition and as changes measured from the no action condition--the condition expected if the current management program were continued. The average 12-month harvest from the Eugene District from 1978 to 1981 was 187.3 MMBF. This recent experience is the baseline labeled the existing conditions. The no action alternative, 219 MMBF per year, is the level which would have prevailed if the decadal allowable harvest (2,190 MMBF) had been sold and harvested in constant annual increments. The

average level of actual sales for 1978-1981 was 214.2 MMBF and for 1972-1977 was 218.5 MMBF.

Table 3-18 shows projects representing average annual local employment and earnings potential of timber sales under all alternatives during the first decade after implementation. Impacts on employment and earnings would be phased in over a period of two or three years due to the customary time lag between sale and harvest. Impacts on receipts distribution would be delayed an additional year. The projections represent the local employment and earnings which would be realized if the annual volume sold under each alternative were promptly harvested and processed.

While it is anticipated that labor productivity will increase in future years leading to fewer jobs per unit of production (Wall and Oswald 1979), in order to simplify the impact estimates they have not been adjusted to reflect productivity changes. The effects of this simplification is to overstate the impacts on employment and earnings by about 10 percent in the short term and possibly by greater amounts in the long term.

Table 3-19 focuses on the impacts each alternative is projected to have on public revenue. Under the O&C Act (1937) and subsequent modifications, 50 percent of the receipts from timber sales on revested O&C lands are distributed to designated county governments. The recipients are those counties in which O&C lands are situated and the basis for distribution is established in the O&C Act (1937). The Act and its modifications establish that

Table 3-17 Herbicide Toxicity

Common Name	Acute Toxicity		Activity in the Soil	No Effect Level Dose in (mg/Kg/day)	Tolerances for Residues in or on Foodstuffs (40 CFR Part 180)
	LD 50 ¹ (Rats)	Commonly Used Term ²			
Asulam (Asulox)	8,000 mg/kg	practically non-toxic	short persistence—half-life 6 to 14 days.	(Not Available)	100 ppb
Atrazine	3,080 mg/kg	slightly toxic	absorbed on muck or clay—remains in 1 foot of soil.	200 (Reproductive) ³	20-250 ppb
2,4-D	300-1,000 mg/kg	moderately toxic to slightly toxic	leached in sandy soils, breakdown depends on microbial activity.	20 (Reproductive) 20 (Teratogenic) ⁴	100-500 ppb
Dalapon (Dowpon)	7,570 mg/kg (female) 9,330 mg/kg (male)	practically non-toxic	leaches readily in soil, breakdown rapid and complete.	50-150 (Reproductive) 500 (Teratogenic)	100-10,000 ppb
Fosamine (Krenite)	24,400 mg/kg	relatively harmless	rapid degradation—very little movement.	60 (Reproductive) 600 (Teratogenic)	(non listed)
Glyphosate (Roundup)	4,320-4,900 mg/kg	slightly toxic	strong absorption—very little or no leaching.	30 (Reproductive) 30 (Teratogenic)	100-6,000 ppb
Hexazinone (Velpar)	1,690 mg/kg	slightly toxic	half-life 2 to 6 months in silt loams.	60 (Reproductive) 300 (Teratogenic)	100-200 ppb
Picloram (Tordon)	8,200 mg/kg	practically non-toxic	absorption by organic matter and clays, may leach in sandy soils.	80-150 (Reproductive) 1,000 (Teratogenic)	50-500 ppb
Triclopyr (Garlon)	2,140-2,830 mg/kg	slightly toxic	possible leaching, half-life of 46 day.	30 (Reproductive) 200 (Teratogenic)	(non listed)

¹ LD 50 (Lethal Dose 50) is the dose of a substance that is fatal to 50 percent of the test animals. Also known as median lethal dose.

² Moderately toxic is 50-500 mg/kg; slightly toxic is 500-5,000 mg/kg; practically non-toxic is 5,000-15,000 mg/kg; relatively harmless is more than 15,000 mg/kg in a single oral dose to rats.

³ The highest dosage level at which no effects have been observed in test animals including loss of skin hair, reduced litter size, or general lethal toxicity.

⁴ Fetus malformations during development, not associated with genetic change.

Table 3-18 Impacts Compared to No Action (and Existing) Condition on Local Employment and Earnings
(Average annual amounts during first decade)

		Timber Industry Employment (Jobs)				Wildlife* and Recreation Dependent Employment (Jobs)		Total Employment (Jobs)				Total Earnings (Millions of 1979 dollars)					
		Logging and Processing		Forest Management		Lane & Linn Counties	Lane & Linn Counties	Lane & Linn Counties	Lane & Linn Counties	Total or Western Oregon	Lane & Linn Counties	Total or Western Oregon	Lane & Linn Counties	Total or Western Oregon			
		Lane & Linn Counties		Total or Western Oregon													
		No Action	Existing	No Action	Existing												
Alt. 1 (EFD)	249	-223	(+ 459)	+228	(+ 469)	+ 7	(+ 7)	-16	(-7)	+885	(+1,345)	+875	(+1,839)	+11.7	(+24.5)	+ 15.7	(+ 32.5)
Alt. 2 (Max. Tbr.)	241	-164	(+ 400)	+167	(+ 408)	+ 6	(+ 6)	-16	(-7)	+459	(+1,169)	+635	(+1,599)	+ 8.6	(+21.3)	+ 11.4	(+ 28.3)
Alt. 3 (Def. Har.)	234	-112	(+ 348)	+114	(+ 355)	+5	(+ 5)	-0	(+ 9)	+330	(+1,044)	+ 450	(+1,418)	+ 6.0	(+18.7)	+7.9	(+ 24.8)
Alt. 4 (S-S D.)	230	+82	(+ 321)	+84	(+ 323)	+4	(+4)	-0	(+ 9)	+242	(+952)	+330	(+1,292)	+4.4	(+17.0)	+5.8	(+22.6)
Alt. 5 (E-W Corr.)	223	+30	(+ 266)	+30	(+ 271)	+ 3	(+ 3)	-1	(+10)	+88	(+802)	+ 120	(+1,088)	+ 1.6	(+14.3)	+2.1	(+ 19.0)
Alt. 6 (No Action)	219	+0	(+ 236)	+0	(+ 241)	+0	(+ 0)	+0	(+ 9)	+0	(+714)	+0	(+968)	+0	(+12.7)	+0	(+ 16.9)
Alt. 7 (O.P.A.)	213	-45	(+ 191)	-46	(+ 195)	-1	(+ 1)	-0	(+ 9)	-132	(+582)	- 180	(+788)	- 2.4	(+10.3)	-3.2	(+ 13.7)
Alt. 8 (No Herb.)	190	-215	(+20)	-220	(+20)	-1	(- 1)	-0	(+ 9)	-637	(+77)	- 869	(+99)	-11.5	(+ 1.2)	-15.3	(+1.5)
Alt. 9 (Eco.)	133	-640	(-404)	-654	(- 413)	-12	(-12)	+6	(+15)	-1,881	(-1,167)	-2,569	(-1,601)	-34.2	(-21.4)	-45.4	(- 28.5)
Alt. 10 (Full Eco.)	71	-1,102	(- 866)	-1,125	(- 884)	-18	(-18)	+7	(-16)	-3,224	(-2,230)	-4,428	(-3,460)	-58.8	(-46.1)	-78.2	(- 61.3)
Employment and earnings dependent on the No Action (Existing Condition) harvest level of 219 (187.3) MMBF/year																	
		1,630	(1,394)	1,665	(1,424)	--	32	--	(84)	4,940	(4,242)	6,706	(5,753)	88.0	(75.3)	116.6	(95.8)
Average of all sources in region and western Oregon (1978-1981 (Tables 2-19))																	
		19,840	(19,840)	59,830	(59,830)	--	NA	--	(5,791)	152,400	(152,400)	1,058,000	(1,058,000)	2,133	(2,133)	12,250	(12,250)
Percent of Eugene BLM of regional and western Oregon average 1978-1981																	
		8.2%	(7.0%)	2.8%	(2.4%)	--	NA	--	1.5%	3.2%	(2.8%)	6%	(5%)	4.1%	(3.5%)	9%	(8%)
NA Estimates of county totals are not available																	

NA Estimates of county totals are not available

* Change in hunting activity dependent on elk produced on land administered by the Eugene District is for the second decade (see Table 3-13).

for each \$100 in receipts from harvest of O&C timber, disbursements to the counties would be \$50: Lane County would receive \$7.64 and Linn County would receive \$1.32. Recently, Eugene District's timber sale program has experienced wide swings in bid prices for stumpage. For example, in FY 1981 the average price of timber sold was \$262 per M bd. ft.; however, in FY 1982 the district recorded an average sales price of \$92.7 per M bd. ft. Given this volatility, Table 3-19 arrays local public revenue for two levels of receipts and displays impacts against two baseline harvest levels. If FY 1981 sales values are the average for 1984-1993, then average annual disbursements to O&C counties from the SYUs are projected to range from \$63.3 million in Alternative 1 to \$18.1 in Alternative 10. When compared to the no action condition, O&C county receipts from the harvest of timber on the Eugene District would increase by \$2.7 million in Alternative 1 and decline by \$13.3 million in Alternative 10, if FY 1982 sales values are the average for the next 10 years.

Conclusions

As noted in Chapter 2, the regional economy is tightly linked to wood products employment. The currently depressed levels of employment in that sector are related to demand conditions in the national economy. Beneath today's concerns are projections for a dip in wood products production

in the 1980's and 1990's due to the availability of timber. Alternatives 1 through 5 increase timber supply from the district and therefore would mitigate dips in employment projected to occur independent of actions by BLM. Alternatives 7 through 10 reduce local timber supply and would intensify the projected downturn.

Impacts on Social Conditions

Timber management on land administered by the Eugene District may affect the lifestyle and/or sense of community stability of western Oregon residents. In some cases, personal well-being is directly impacted such as a loss of employment. Indirect impacts include a community's sense of well-being as manifested through improved public services, increased employment opportunities, or the availability of recreation.

Employment impacts are reported in table 3-18. Displayed, by alternative, are changes in work-years of employment in the wood products industry which are dependent on the sale of timber from the Eugene District. The number of directly impacted individuals may differ depending on whether the work is done through job-sharing or overtime. But, since the type of labor input (job sharing or overtime) does not change by

Table 3-19 Projected Distribution of O&C Payments from the Western Oregon SYUs to Counties by Alternative
(average annual disbursements in millions of dollars)
O&C Disbursement from SYUs based on FY 1982 sales value of \$92.7 per MBF

County	Percent Share O&C Payment	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7	Alt. 8	Alt. 9	Alt. 10
		Max.EFD	Max.Tbr.	Def.Har.	SSD	E-W Cor.	No Action	O.P.A.	No Herb.	Eco.	Full Eco.
Benton	2.81	.63	.61	.59	.58	.56	.55	.54	.48	.34	.18
Clackamas	5.55	1.24	1.20	1.17	1.15	1.11	1.09	1.06	.95	.66	.35
Columbia	2.06	.46	.45	.43	.43	.41	.41	.39	.35	.25	.13
Coos	5.90	1.32	1.28	1.24	1.22	1.18	1.16	1.13	1.01	.71	.38
Curry	3.65	.82	.79	.77	.75	.73	.72	.70	.62	.44	.23
Douglas	25.05	5.61	5.43	5.27	5.18	5.02	4.93	4.80	4.28	3.00	1.60
Jackson	15.67	3.51	3.39	3.30	3.24	3.14	3.09	3.00	2.68	1.87	1.00
Josephine	12.08	2.70	2.62	2.54	2.50	2.42	2.38	2.31	2.06	1.44	.77
Klamath	2.34	.52	.51	.49	.48	.47	.46	.45	.40	.28	.15
Lane	15.27	3.42	3.31	3.21	3.16	3.06	3.01	2.92	2.61	1.83	.97
Lincoln	.36	.08	.08	.08	.07	.07	.07	.07	.06	.04	.02
Linn	2.64	.59	.57	.56	.55	.53	.52	.51	.45	.32	.17
Marion	1.46	.33	.32	.31	.30	.29	.29	.28	.25	.17	.09
Multnomah	1.09	.24	.24	.23	.23	.22	.21	.21	.19	.13	.07
Polk	2.16	.48	.47	.45	.45	.43	.43	.41	.37	.26	.14
Tillamook	.56	.13	.12	.12	.12	.11	.11	.11	.10	.07	.04
Washington	.63	.14	.14	.13	.13	.13	.12	.12	.11	.08	.04
Yamhill	.72	.16	.16	.15	.15	.14	.14	.14	.12	.09	.05
TOTAL FY82 1	100.00	22.38	21.67	21.04	20.68	20.05	19.69	19.15	17.08	11.96	6.38

O&C Disbursements from SYUs Based on FY1981 Sales Value of \$262 per MBF

County	Share of Payment	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7	Alt. 8	Alt. 9	Alt. 10
		Max.EFD	Max.Tbr.	Def.Har.	SSD	E-W Cor.	No Action	O.P.A.	No Herb.	Eco.	Full Eco.
Benton	2.81	1.78	1.72	1.67	1.64	1.59	1.56	1.52	1.36	.95	.51
Clackamas	5.55	3.51	3.40	3.30	3.25	3.15	3.09	3.01	2.68	1.88	1.00
Columbia	2.06	1.30	1.26	1.23	1.20	1.17	1.15	1.12	1.00	.70	.37
Coos	5.90	3.74	3.62	3.51	3.45	3.35	3.29	3.20	2.85	2.00	1.07
Curry	3.65	2.31	2.24	2.17	2.13	2.07	2.03	1.98	1.76	1.23	.66
Douglas	25.05	15.86	15.35	14.90	14.65	14.20	13.95	13.57	12.10	8.47	4.52
Jackson	15.67	9.92	9.60	9.32	9.16	8.88	8.49	8.49	7.57	5.30	2.83
Josephine	12.08	7.65	7.40	7.19	7.06	6.85	6.73	6.54	5.84	4.08	2.18
Klamath	2.34	1.48	1.43	1.39	1.37	1.33	1.30	1.27	1.13	.79	.42
Lane	15.27	9.67	9.36	9.09	8.93	8.66	8.50	8.27	7.38	5.16	2.76
Lincoln	.36	.23	.22	.21	.21	.20	.20	.19	.17	.12	.06
Linn	2.64	1.67	1.62	1.57	1.54	1.50	1.47	1.43	1.28	.89	.48
Marion	1.46	.92	.89	.87	.85	.83	.81	.79	.71	.49	.26
Multnomah	1.09	.69	.67	.65	.64	.62	.61	.59	.53	.37	.20
Polk	2.16	1.37	1.32	1.29	1.26	1.22	1.20	1.17	1.04	.73	.39
Tillamook	.56	.35	.34	.33	.33	.32	.31	.30	.27	.19	.10
Washington	.63	.40	.39	.37	.37	.36	.35	.34	.30	.21	.11
Yamhill	.72	.46	.44	.43	.42	.41	.40	.39	.35	.24	.13
TOTAL FY81 1	100.00	63.31	61.28	59.50	58.48	56.70	55.68	54.16	48.31	33.82	18.05

Change in O&C Disbursements Compared to Existing Conditions (FY 1979-81)

	Existing Condition										
Total @ \$92.7/MBF	22.82	-0.44	-1.16	-1.79	-2.14	-2.77	-3.13	-3.67	-5.74	-10.86	-16.44
Total @ \$262/MBF	22.82	40.49	38.45	36.67	35.66	33.88	32.86	31.34	25.49	10.99	- 4.77

Change in O&C Disbursements Compared to No Action (219 MMBF)

	No Action Condition										
Total @ \$92.7/MBF	19.69	2.69	1.98	1.35	.99	.36	0.00	-0.54	-2.61	- 7.73	-13.30
Total @ \$262/MBF	55.68	7.63	5.59	3.81	2.80	1.02	0.00	-1.53	-7.37	-21.87	-37.63

1 Totals will not always equal sum of columns due to rounding.

alternative, the display in Table 3-18 gives a good measure of the relative number of families impacted by alternative.

Indirect impacts of changes in employment on community well-being is related to the geographic distribution of the employment dependent on timber sales from the Eugene District. Several factors determine the impact on community well-being. One factor is determining if the market place would substitute stumpage from other sources for lost stumpage from the Eugene District; if so, the workers are not really displaced, but simply move from one milling complex to another. A number of studies (Beuter et al., 1976; OSDF 1980; Hahn 1981) indicate that stumpage from other sources is not available; therefore employment will be impacted. Another factor affecting community well-being is the distribution of the employment displaced or added. Are all timber-dependent operations in the area affected at the margin, hiring or firing a single worker? Or is the impact manifested through the opening or closing of a conversion facility operating at the fringes of profitability? Table 3-20 provides an example of distributed impact, i.e., each firm affected at the margin. For each community processing, the table shows employment growing or shrinking by alternative. The communities identified are those which had mills receiving logs from the Eugene District during 1975-1977. More pronounced impacts on community stability occur if employment changes manifest themselves as closure or opening of a mill in a small or isolated community. The level of impact goes up as distance from other employment and labor center increases and the level of impact heightens as mill employment increases as a percentage of total employment in the community. Culp Creek and Noti are examples from Table 3-20, where the level of dependence on Eugene District timber (1975-1977) is high and the effect of a mill closure would be significant due to each community's size and dependence on timber-related employment.

Attitudes and Opinions

Harris (1979) indicates that many people want more of all forest uses, except for off-road vehicles. Unfortunately, this survey does not show whether the same or different people favor more or less of the various uses, or whether people would make trade-offs to have less of some uses in order to have more of other uses. However, the survey results do suggest that alternatives that strongly emphasize one or two resource uses would satisfy fewer people than an alternative that ensures diverse forest uses and opportunities.

The greater timber production in Alternatives 1 to 5 would meet various degrees of approval by people seeking increased timber supply. This may include loggers, wood products workers, mill owners, county officials dependent on O&C timber receipts and other citizens. The reduced levels of timber production in Alternatives 7 to 10 would be welcomed by those people promoting shift in the structure of the regional economy away from wood products harvest and manufacture, or those people who do not believe that current levels of wood products employment can or should be sustained.

Some people strongly believe that continued or accelerated harvest of old-growth timber will have significant adverse impacts on wildlife species which reside in the older seral stages of forest habitat. These people will be adversely impacted by Alternatives 1 to 8. Alternative 8 would satisfy those who oppose or fear the use of herbicides, but not those who believe that herbicide use ensures more wood products jobs.

Actions by BLM that increase opportunities for work, subsistence and recreational activities would have beneficial social effects, while actions that reduce these opportunities would have adverse social effects. Actions that divide and polarize a community have adverse social effects. An action may be perceived as beneficial by wood product workers but detrimental by people not involved in forestry employment; or an action that unites a small community may have divisive effects in a larger community.

Table 3-20 Example of the Number of Timber Processing Jobs Potentially Attributable to the Eugene District Alternative Harvest Levels

Alternative Number		1	2	3	4	5	6	7	8	9	10
Percent Different From No Action		+13.7	+10.0	+6.8	+5.0	+1.8	---	-2.7	-13.2	-39.3	-67.6
Community Receiving Eugene District Timber (1975-77)¹	Number (and percent) of Each Community's Timber Processing Jobs Based on Eugene District Timber---(1975-77 Average Volume)¹										
Douglas County											
Reedsport/Gardner	5.1(0.1)	5.8	5.6	5.4	5.4	5.2	---	5.0	4.4	3.1	1.7
Lane County											
Coburg	64.6(64.6)	73.5	71.1	68.9	67.8	65.8	---	62.9	56.1	39.2	21.0
Cottage Grove	135.9(14.6)	154.5	149.5	145.1	142.7	138.3	---	132.2	118.0	82.5	44.0
Creswell	13.9(6.8)	15.8	15.3	14.8	14.6	14.2	---	13.5	12.1	8.4	4.5
Culp Creek	145.5(28.0)	165.4	160.1	155.4	152.8	148.1	---	141.6	126.3	88.3	47.1
Eugene/Springfield	425.1(7.9)	483.3	467.6	454.0	446.4	432.8	---	413.6	369.0	258.0	137.7
Junction City	9.1(4.1)	10.3	10.0	9.7	9.6	9.3	---	8.9	7.9	5.5	2.9
Mapleton	22.5(4.4)	25.6	24.6	24.0	23.6	22.9	---	21.9	19.5	13.7	7.3
Noti	29.5(24.6)	33.5	32.5	31.5	31.0	30.0	---	28.7	25.6	17.9	9.6
Linn County											
Lebanon	1.9(0.1)	2.2	2.1	2.0	2.0	1.9	---	1.8	1.6	1.2	0.6
Sweet Home	54.8(6.1)	62.3	60.3	58.5	57.5	55.8	---	53.3	47.6	33.3	17.8
TOTAL	908.0(7.6)	1,032.2	998.7	969.3	953.4	924.3		883.4	788.1	551.1	294.2

¹ From Table 2-25.

CHAPTER 4

CONSULTATION AND COORDINATION ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT



The Draft Eugene Timber Management Environmental Impact Statement was filed with the Environmental Protection Agency and released to the public on November 24, 1982 and open to comment until January 24, 1983. A partial list of those sent a copy of the draft EIS follows this chapter.

A public meeting on the draft, held January 12, 1983 in Eugene, Oregon, was attended by 28 people. Twenty people attended two sessions of a draft EIS workshop held on December 15, 1982. A total of 47 letters of comment were received through the mail. Consultation and coordination also took place with many Federal and State agencies and local governments.

All letters were reviewed and considered. Response is made to comments which raised questions or issues bearing directly upon the environmental effects of the proposed action or alternatives, presented new data, or questioned facts and/or analyses. Comments identifying errors or omissions were corrected in the text and referenced.

All letters have been reproduced in this final EIS, with each substantive comment identified and numbered. BLM responses immediately follow each of the letters.

Table 4-1a Costs of Intensive Management in the Preferred Alternative

	Estimated Annual Program	Cost Per Acre	Annual Dollars by Practice	Allowable Harvest by Practice
Timber Management				
Site Preparation (acres) ¹				
Broadcast Burning	3078	300 ¹	921,900	178.0 MMBF
Herbicide	748	63	47,100	
Manual	360	300	108,000	
Mechanical	315	200	63,000	
Planting (acres)				
Initial Plant	3851	140	539,100	
Replant or Interplant	963	238	229,200	
Plantation Protection (acres)	1284	56	71,900	
Plantation Maintenance and Release (acres)	3687	64	236,000	
Tree Improvement			333,000	12.0 MMBF
Precommercial/Commercial Thinning (acres)	1401	102	142,900	28.8 MMBF
Fertilization (acres)	6769	72	487,400	6.1 MMBF
Total Annual Prog.			3,179,500	
Wildlife Management				
Snag Management	800	425	340,000	

¹ \$250 per acre is purchaser involvement or contribution
\$50 per acre is administration by BLM

In most cases, only comments pertaining to the adequacy of the DEIS, new alternatives or factual corrections are formally responded to in this document. However, all comments (oral and written) and any new information will be taken into account when the decision document regarding timber management is drafted.

Copies of all written comments are available for public review at the Eugene District Office, 1255 Pearl Street, Eugene, Oregon, 97401.

Response to Comments

Common Issues

A number of broad issues were raised frequently by reviewers. These issues and responses to them are presented below.

Common Issue 1: Several commenters expressed concern about the assumption of full funding for the proposed level

of intensive timber management practices. They indicated doubt about the availability of a full funding level and requested a display of costs of each management practice and its effect on allowable harvest.

Response:

The district's choice of a preferred alternative is based on factors other than funding (see Appendix B). Annual funding is the result of the Federal budgeting process and would depend on the decisions of the Office of Management and Budget and the Congress. The table 4-1a shows the funding required to support intensive management and the linkage between intensive management and allowable harvest in the preferred alternative (Alternative 5).

Table 4-1b lists the approximate average annual cost of implementing the decision by major program area for the first decade. Only timber

SD
538.2
.07
E95
1983

U. S. Bureau of Land Management. Oregon
State Office.

Eugene sustained yield units : ten-
year timber management plan : final
environmental impact statement /
prepared by U.S. Department of the
Interior, Bureau of Land Management,
Oregon State Office. -- [Oregon] : The
Office, [1983]

vi, 179 p. : ill., maps ; 28 cm.

Cover title: Eugene timber management
: environmental impact statement :
final.

"May 1983."

Bibliography: p. 169-177.

Includes index.

26 JUL 97 9743210 UDDDXc SEE NEXT CRD

SD
538.2
.07
E95
1983

U. S. Bureau of Land Management. Oregon
State Office.

Eugene sustained yield units : ...
[1983] (Card 2)

1. Forest management--Oregon. 2.
Forests and forestry--Oregon. 3.
Public lands--Oregon. I. Title II.
Title: Eugene timber management :
environmental impact statement : final.
III. Title: Final Eugene timber
management E.I.S.

26 JUL 97 9743210 UDDDXc

management and closely related programs are shown.

The average annual cost to implement the proposed decision is approximately \$9.5 million.

Timber and fire management programs are directly related to the growth projections made in determining the allowable harvest level of 223 MM bd. ft. at the FY83 funding level all intensive management programs would not be implemented. In particular, this probably would affect fertilization and stand conversions, and approximately 65 percent of the precommercial thinning program. The estimated effect on the allowable cut of this shortfall would be about 28 MM bd. ft.

Table 4-1b - Funding Comparison (\$1000)

Major Program Area	1983 Base Level	Full Implementation (1983 Dollars)
Transportation Systems ¹	986	1,600
Timber Management ² (Including land survey)	4,823	6,197
Fire Management ²	741	951
Fisheries & Wildlife	90	600 ³
Soil, Air, Water	104	166
Total ⁴	6,744	9,514
Allowable Harvest Levels (MM bd. ft.)	219	223

¹ Includes access acquisition and maintenance; does not include funding for major construction projects or aggregate production.

² Program areas directly related to reforestation and growth including contractual allowances.

³ Includes funding for the development and implementation of habitat management plans.

⁴ Includes monitoring, but not research, which is funded on a statewide basis.

Common Issue 2:

A number of commenters questioned analysis of habitat needs and requested additional information about wildlife inventories, analysis techniques or research needs, either generally or in regard to certain species. Additional information was also requested about proposed wildlife management techniques and mitigating measures.

Response:

Wildlife Inventories and Analysis Procedures--General

Forest type islands identified and described in BLM forest inventories (Appendix C) were examined using 1979 aerial color photography and topographic maps to determine their wildlife habitat values. Habitat values were determined for the various forest types after reviewing the professional literature, consulting experts and

analyzing the results of on-the-ground studies and numerous local observations of wildlife use. These acreage summations of forest type islands, stratified by wildlife habitat categories, were the basis of quantified data presented in Tables 3-9, 3-11, 3-12, 3-14 and 3-15.

The standards for maintaining viable populations, against which the alternatives were compared in the old growth analysis in Table 3-9, were developed by the Oregon State Office (USDI-BLM 1980f) in accordance with principles of biographical theory (Anderson and Robbins 1981; Diamond 1975 and 1976a and b; Millson 1978; Galli et al. 1976; Gottfried 1979; Miller 1978; Picton 1979; Thompson 1978; Meslow, Maser and Verner 1981; Thomas, Moser and Rodiek 1979 and Harris et al. 1982).

Bald Eagles

Older seral stage forests in close proximity of major water bodies provide nesting and roosting habitat (Anthony et al. 1982). Aerial surveys of such sites on BLM lands were conducted in 1980 and 1981. No new nests were found. Although some of these sites offer potential as winter roost sites, an inventory of winter roosts, as such, has not been conducted.

Spotted Owls

Spotted owls were first located in the District by Eric Forsman in 1972. Inventories of potential habitat were initiated by BLM personnel in 1975. Subsequent inventories and monitoring have continued annually through the summer of 1982. During the spring and summer of 1976, larger tracts of second-growth stands were surveyed to determine spotted owl occurrence.

Some 50 pairs and additional individual birds have been located on lands administered by the Eugene District during this period. Currently there are an estimated 26-27 pairs that are known, or believed, to be reproducing. All of these pairs are associated with older forest habitat. There are no known breeding birds in second growth stands.

The total spotted owl habitat for the 26-27 pairs includes approximately 20,000 acres of well stocked older seral stage forest and some 15,000 acres of younger forests, some as young as 50 years, that provide at least marginal forage. The additional older forest, approximately 35,000 acres, is not spotted owl habitat due to its fragmented condition. Some portion of it, however, is important to the long-term maintenance of viable populations due to its value to dispersing birds.

Estimates of spotted owl productivity for the various alternatives, therefore, must consider the degree of protection afforded site-specific areas. Dividing gross acreage figures by 1,000 acres does not, therefore, identify the number of existing, or potential, owl pairs.

Management alternatives for spotted owls are currently non-existent since potential techniques are untried and/or unevaluated as to effectiveness. The need to develop management alternatives has been identified in the Interagency Spotted Owl Management Plan and research is planned that will contribute to this goal (USDI-BLM 1982g).

Alternatives 9 and 10 provide effective mitigation to timber management for all species of wildlife, including spotted owls. Alternatives 3, 4, 5, 7 and 8 moderate timber management impacts to spotted owls to lesser degrees.

Roosevelt Elk

Roosevelt elk is a species linked to older seral stage forests by its need for thermal and survival cover. These cover requirements are the result of evolutionary development with old-growth forests in a mild climate. Consequently they differ significantly from Rocky Mountain elk in their physiology and habitat requirements (Starkey, deCalesta and Witmer 1982; Janz 1980; Witmer 1982; Smithey 1982). Roosevelt elk were once very abundant in western Oregon until very nearly extirpated in the 1880s by habitat loss and market hunting (Graf 1943).

All BLM forest type islands in the Siuslaw River area were evaluated to determine their suitability for Roosevelt elk for cover and/or forage. Current condition of cover/forage was quantified by applying numerical cover values to acreages of forest types providing "hiding," "thermal" and "survival" cover. Acreages of forest types available were determined from the BLM timber inventory. Cover values used were from a draft of Chapter II "Deer and Elk" in the "Westside Forest-Wildlife Habitat Relationships Handbook," currently under development. This process was repeated for all alternatives using acreage predictions generated by BLM timber managers.

Percentages shown for Roosevelt elk in Table 3-11 therefore indicate predicted changes in the cover-forage component of elk habitat. The following table shows predicted potential elk populations within the Siuslaw River area assuming effective road closures, optimum juxtaposition of forage and cover habitats, and forage seedings. Potential effectiveness of road closures under the various alternatives, however, has not been determined.

Estimates of potential populations have been derived from information supplied by the Oregon Department of Fish & Wildlife. They (Lantz 1983) estimate that: 1) District lands could produce about 15 elk per square mile if managed for maximum habitat effectiveness, 2) current potential is about 10.5 elk per square mile, 3) Alternatives 9 and 10 could produce 10.5 to 15 elk per square mile, 4) under all other alternatives, a reduction in elk population potential at least equivalent to the percent habitat reductions (Table 3-11) can be expected and 5) additional losses would occur in the absence of effective road control and optimum juxtaposition of forage and cover areas.

Therefore, the 50 square miles of BLM elk habitat in the Siuslaw River area between Alma and Austa could produce up to 750 elk if managed under the design features of Alternatives 9 and 10. The potential elk carrying capacity, given effective road control, optimum juxtaposition of food and cover areas and forage seeding, is now about 525 animals; at present, there are about 200 animals in the area (Jubber 1981). Potential elk populations as estimated above assume habitat management that would effectively close roads and provide optimum distribution of food and cover areas. These populations are based on habitat changes shown in Table 3-15. Because of less than ideal food and cover distributions, it is possible that future timber harvest patterns could at times preclude achieving the optimum carrying capacity. Similar relationships to habitat could be expected in the Deadwood Creek-Windy Peak area in the Noti Resource Area (Sturgis 1983) and the upper Mosby Creek-Huckleberry Mountain area in the Dorena Resource Area (Greer 1983).

The elk analysis does not show that older seral stage forests are essential if elk are to exist in the forest. It does, however, quantify the habitat values of older forest as they relate to elk productivity. Elk would probably continue to exist under the most intensive timber management alternatives, but at differing population levels depending on applied mitigation measures.

Some respondents questioned BLM's evaluation of elk habitat on the basis that elk are thriving, or populations are exploding, in areas characterized

Table 4-2 Estimated Potential Elk Populations in the Siuslaw River Area

	Alternative									
	1	2	3	4	5	6	7	8	9	10
Short Term	315	315	315	341	368	289	420	446	525	525
Long Term	210	210	210	210	289	131	315	394	750	750

Potential Population 525

Current (Existing) Population 200

as highly disturbed or in second growth forest. Three examples of such areas were cited: the Millicoma Tree Farm, the Tillamook Burn area and the Mount St. Helen's area.

Historically, in the Pacific Northwest, timber harvest in the form of clearcutting has proven beneficial to big game species, including Roosevelt elk, where the result was an increase in forage. Once timber harvest progressed to the point that other habitat components, such as thermal cover, became limiting, carrying capacity decreased and elk populations dropped markedly. The 210,000-acre Millicoma Tree Farm is an example of this situation. In 1964 elk populations built to approximately 4,000 animals, approximately 12.5 per square mile, in response to increased forage following timber harvest. Populations began to decrease after cover came into short supply. Currently, populations are approximately 50 percent of the 1964 level. This decrease has been determined by Oregon Department of Fish and Wildlife surveys (Hines 1983). Continued decreases are forecast as the remaining older forest is liquidated. It should be noted that this situation reflects decreased carrying capacity due to inability of the habitat to sustain animal numbers through a relatively mild winter. Hines (1983) has identified significant mortality of branch-antlered bulls in the Millicoma during the winter of 1981-82.

Although elk may seem abundant in the Tillamook area, densities are approximately 2.7 animals per square mile of elk habitat. Although numbers are increasing, current habitat capabilities are limited, estimated at about 5.1 animals per square mile (Taylor 1983).

A progress report on Weyerhaeuser Company sponsored research (Merrill, et al., 1983) near Mount St. Helen has been cited as evidence that elk populations are increasing rapidly in the denuded blast zone. A review of the data shows that populations remain very low in those areas severely impacted by the blast. For example, based on the September 1979 population, elk were reduced by 69 percent and deer by 74 percent in game management unit 524 (Margaret). Statements indicating that elk populations have returned to near-normal, or pre-blast levels, are based on estimates of populations in the "Red" and "Blue" zones combined. This red and blue zone area includes an extensive acreage of unaffected habitat to the southeast, south and southwest of the volcano that has been enhanced by the closure policy, i.e., it has increased elk security. Movement of elk into the blast zone has occurred. Considering the biology of the animal, this predicted expansion into a population vacuum is not unexpected.

Each of the EIS alternatives represents a management alternative for Roosevelt elk

assuming available habitat is managed intensively for elk, including security, juxtaposition of food and cover and forage seedings. Different assumptions about road closures, cover-forage juxtaposition and other habitat factors would change the perception of the elk management regime for each EIS alternative.

Management Alternatives and Mitigating Measures

Several respondents were concerned about the absence of discussion in the draft EIS of possible mitigation measures or management alternatives for wildlife.

As indicated in the above discussion on spotted owls and Roosevelt elk, each alternative represents a management alternative for all wildlife species, not only by the differing proportions of various land allocations, but also by the varying degrees of wildlife mitigation applied. During the planning process, a full range of wildlife management opportunities was developed including mitigating for the impacts of timber harvest and associated activities. Among these measures:

- Snag management on the intensive timber management land base to insure viable populations of cavity users. This includes the preservation of green trees on logged areas for subsequent conversion to snags.
- Riparian habitat protection on all stream orders to provide optimum protection for dependent species and partial mitigation for losses to snags, logs, and hardwoods lost on the intensive land base.
- Management of early seral stage for a mixture of tree species to mitigate the overall reduction in hardwoods and other species.
- Retention of dense stocking on a portion of the 30-80 year age classes to maintain viable populations of Accipiter hawks.
- Management of TPCC withdrawn areas, and other withdrawn lands for wildlife provide partial mitigation for many species.

Alternatives 9 and 10 incorporate the full range of mitigating measures. Similar types of mitigative measures were adopted at reduced levels of intensities for Alternatives 3, 5, 7 and 8. Alternatives 1, 2 and 4 include few of these measures. The benefits of this mitigation were considered in the draft EIS analysis and is reflected in the description of district-wide impacts in the final EIS. The final EIS has been revised to include a discussion of mitigation in Chapter 1, Forest Management Treatments and Design Elements.

Opportunities for mitigation using artificial structures for nesting, roosting and denning, or by artificially increasing food supplies are limited to

few species. Wholesale attempts to maintain viable populations of any significant number of species by this means would be costly in terms of both dollars and staffing. Increased use of these techniques will occur to a limited degree, however.

Common Issue 3:

Some commenters said that the DEIS did not provide sufficient detail on timber production opportunities foregone by various allocations in each alternative.

Response:

Displayed below are timber volume foregone for each EIS alternative by land use allocation.

Common Issue 4:

Some respondents criticized the Seral Stage Distribution concept, claiming that SSD

withdrawals were not supported by a scientifically valid rationale or that currently available techniques such as fertilization were sufficient to replace the natural processes occurring in old-growth stands. Others charged that the general concept was valid, but that insufficient withdrawals had been made to achieve the goals of the concept.

Response:

In developing the concept of Seral Stage Distribution, current scientific research was considered.

Clearly this research information does not represent a detailed knowledge of the structure, function and interrelationships of the components of old-growth ecosystems. However, there are

Table 4-3 Timber Volume Foregone by Allocation (MM bd. ft.)

	Alt. 1 Max/ EFD	Alt. 2 Max. Tbr.	Alt. 3 Def. Har.	Alt. 4 S.S.D.	Alt. 5 E-W Cor.	Alt. 6 No Action	Alt. 7 O.P.A.	Alt. 8 No Herb.	Alt. 9 Eco.	Alt. 10 Full Eco.
MFP Withdrawals										
Botanical	0	0	0	.4	0	0	0	0	.4	.4
Cultural	<.1	<.1	<.1	<.1	<.1	0	<.1	<.1	<.1	<.1
Research										
Natural Areas	0	0	.5	.5	.5	0	.5	.5	.5	.5
Mid-Age & Old- Growth Forest	.1	.1	.1	3.5	.1	0	.1	.1	.1	25.0
Riparian Areas	0	0	6.4	6.4	6.4	.2	6.4	6.4	28.4	28.4
Constrained Timber Production Base										
Visual Resource Management	0	0	.3	.3	.3	4.8	.3	.3	14.4	36.2
Mid-Age & Old- Growth Forest	0	0	0	0	9.1	1.2	19.1	9.1	61.0	76.3
Snag Management	0	0	0	0	1.8	0	1.8	1.8	3.2	3.2
No Use of Herbicides or Credit for Fertilization or Genetics	0	0	0	0	0	0	0	23	0	0
Total Volume Foregone	0	<1	7	11	18	6	28	51	108	170
Allowable Cut	249 ¹	241	234	230	223	219 ²	213	190	133	71

¹ In Alternative 1, an 8 MMBF increase over the even flow level would occur during the first two decades. Harvest levels beyond the second decade would decline by as much as 5 MMBF (236 MMBF, total) below the even flow level.

² Alternative 6 utilizes the 1970 land base, inventory and allowable cut projections.

strong indications that certain natural parts of these systems, such as nutrient cycling, nitrogen fixation and mycorrhizal dispersal, may be keys to the maintenance of long-term timber productivity. Efforts in fertilization and mycorrhizal dispersal have been launched in an attempt to replicate these natural occurrences. However, long-term efficiency and effectiveness of these efforts remain to be proven. Also, the promise shown by even the limited research done to date hints at the possibility of additional valuable information awaiting discovery.

Unfortunately, current knowledge can neither prove nor disprove the importance of any such processes to future forest productivity. But this uncertainty carries a connotation of potentially significant effects on timber production and the health of the forest in general. If no provision is made to maintain an adequate representation of old growth, the possibility exists that something of long-term importance may be gone before its value is recognized.

BLM's new preferred alternative (Alternative 5) incorporates the seral stage distribution system within the larger east-west corridor system, described in Appendix B. The additional average provides additional assurance that adequate mid-age and old-growth forest stands will be available if research indicates the need to maintain these stands for long-term forest productivity. BLM's contribution to this research will be described in the section on monitoring and research in the record of decision.

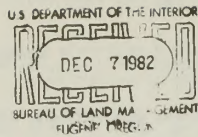
Response to Written Comments

Each person, organization or agency that provided written comments was assigned an index (letter) number in consecutive order as received. Material enclosed with letters 12, 29, 39, and 43 is available for review at the Eugene District Office.

Letter

No. Agency, Organization or Individual

1. Stephen R. Mark
2. Oregon Department of Land Conservation and Development
3. Wildlife Management Institute
4. Oregon Natural Resources Council
5. State of Oregon, Executive Dept., Intergovern. Relations Div.
6. University of Oregon, Department of Geography
7. Obsidians, Eugene
8. Forest Service, Pacific NW Region, Office of Regional Forester
9. Glenn Turnier
10. Joseph Yuska
11. North West Timber Association
12. Western Forest Industries Association
13. Lane Council of Governments
14. USDI, Geological Survey
15. Martha Teich
16. Robert B. Ward Jr.
17. Richard D. Rohl
18. Charles W. Selden, III
19. Oregon Dept. of Environmental Quality
20. John R. Swanson
21. Sierra Club, Oregon Chapter
22. USDI, National Park Service, Pacific Northwest Region
23. OSU, Oregon Coop. Wildlife Research Unit, Dept. of Fisheries and Wildlife
24. Willamette Industries, Inc.
25. USDI, Fish & Wildlife Service, Div. of Ecological Services
26. Champion International Corporation
27. Jeff Madsen
28. Sierra Club, Many Rivers Group
29. Save our EcoSystems, Inc. (S.O.S.)
30. Lane County Audubon Society
31. Rex Timber Inc.
32. Industrial Forestry Association
33. Weyerhaeuser Company
34. Oregon Forestry Department, Office of State Forester
35. Oregon Department of Fish and Wildlife
36. John Timm
37. Norman T. Marsh
38. Peter D. Teensma
39. National Wildlife Federation, Oregon Chapter
40. USDI, Soil Conservation Service
41. Lane Regional Air Pollution Authority
42. Associated Oregon Loggers, Inc.
43. Douglas Timber Operators, Inc.
44. Association of O & C Counties
45. International Paper Company
46. Oregon Wildlife Federation
47. U.S. Environmental Protection Agency, Region X



148 Van Ness
Ashland, OR 97520
6 December 1982



Department of Land Conservation and Development

1175 COURT STREET N.E., SALEM, OREGON 97310-0590 PHONE (503) 378-4926

Dwight Patton
District Manager
Bureau of Land Management
PO Box 10226
Eugene, OR 97440

Dear Mr. Patton:

I am writing to urge the adoption of an ecosystem management approach to BLM forestlands. In analyzing the various alternatives in the EIS, I think it is very important to manage the land for a broad range of multiple values, instead of for short term profit.

Under such an ecosystem-multiple value approach, the critical component of old growth forest would be protected, Windy Peak would be a roadless or wilderness study area, and the Siuslaw would receive protection as a Wild and Scenic River. Also, Areas of Critical Environmental Concern should be designated to protect wildlife.

Thank you for the opportunity to express my concerns.

Sincerely,

Stephen R. Mark
Stephen R. Mark

December 29, 1982

Dwight Patterson, District Manager
Bureau of Land Management
PO Box 10226
Eugene, OR 97440

Dear Mr. Patterson:

We offer the following comments on the Draft Environmental Impact Statement for the Eugene Timber Management Plan:

- 2-1 1. (Page 12) There are 15 Statewide Planning Goals (instead of 14) which apply outside the coastal zone.
- 2-2 2. (Page 13) On December 14, 1982, the LDCD acknowledged, except for Goal 5 habitat areas, the Comprehensive Plan for Douglas County. Benton County's Plan is under a continuance order for Goals 1, 3, 4 and 5, as is Linn County's Plan for Goals 2-6, 12 and 15. Continuance orders are offered to local governments which have made substantial headway towards acknowledgment, but have a few remaining Goal deficiencies which are noted in the order.
3. (Pages 14 and 15, Table 1-4) The table adequately summarizes Goal issues, but should also reference that portion of the EIS where more discussion occurs. For example: Goal 5 resources are discussed under Chapter 2, pages 19 through 32; and Chapter 3, pages 49 through 67.

Sincerely,

James H. Claypool
James H. Claypool
State and Federal Agency Coordinator

JHC:llt
24048/38

Response to comments in Letter 2.

- 2-1 The Interrelationships section of Chapter 1 has been revised in the final EIS.
- 2-2 The Interrelationships section of Chapter 1 has been revised in the final EIS.



DANIEL A. POOLE
President
L. R. JAHN
Vice President
L. L. WILLIAMSON
Secretary
JACK S. PARKER
Board Chairman

Wildlife Management Institute

3000 Wilson Boulevard, N.W., Washington, D.C. 20005 • 202 / 347-1774

December 27, 1982

Mr. Dwight Patton
District Manager
Bureau of Land Management
Post Office Box 10226
Eugene, Oregon 97440

Dear Mr. Patton:

The Wildlife Management Institute is pleased to comment on DRAFT EUCENE TIMBER MANAGEMENT, ENVIRONMENTAL IMPACT STATEMENT, Oregon.

The preferred alternative number 4 is not satisfactory for wildlife.

Alternative number 7, the original proposed action, is much better, since it recognizes the wildlife values of public land and the responsibilities of public land managers for managing all resources, including wildlife habitat. Alternative 7 was a great step forward in wildlife management on O & C lands, yet it only minimally provided for the vegetative diversity required to maintain viable populations of all wildlife species.

We commend the administrators and staff of both the Oregon State Office and the Eugene District Office for their courage and wildlife interest as reflected by their selection of the original preferred alternative (No. 7).

We have used Table 3-11 to compute the long-term percentage changes to some wildlife under the preferred alternative 4, Seral Stage Distribution, Long Term.

Spotted Owls	-97.6 percent
Roosevelt Elk	-75 percent (given)
Cavity Users	-71 percent
Coopers and Sharpshinned Hawk	-80 percent

We cannot accept management programs that are this devastating to wildlife regardless of the token distribution of old-growth timber.

In the original alternative 7, old growth was maintained for wildlife; in alternative 4, lesser amounts of old growth are maintained just in case it might be valuable some day. It is only safeguarded for 10 years (p. 83) here and in the South Coast plan. The fine statements on page 25 are sufficient justification for old-growth retention in much greater amounts than either alternative proposes.

We found no section on how this plan is to be monitored. The only description offered is on how timber sales will be administered.

Some specific comments follow:

- 3-1** Page 2. Give a breakdown of public domain land. What is its ecological status and what management is proposed? We insist this land be managed as additional old growth--it is not subject to the O & C law.

Page 4, 2nd column, 2nd paragraph. Unless the words "when consistent with intensive timber production" are removed, "wildlife considerations" will be few, if any.

- 3-2** Page 14, LCDC, Goal 5, Comments. How are scenic resources protected "to some degree?"

- 3-3** Page 15, LCDC, Goal 8, Comments. How will a decline of 75 percent in Roosevelt elk "satisfy recreational needs of the citizens of the state and visitors?"

Page 25. Excellent justification for old growth.

Page 28. First two paragraphs really tell BLM what it must do to provide viable populations. Why not change the law and do it? Or at least change solicitors (again) and go back to the old opinion that was not antiwildlife.

Page 28, right column, 2nd paragraph. Snags are not only optimum habitat for cavity dwellers. They are the only habitat.

- 3-4** Page 29, 3rd paragraph. What is to be the fate of hardwood habitats and the 72 species using them?

- 3-5** Page 53, Table 3-8. Define "Large Block Areas."

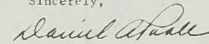
Page 58. Alternative 4 provides no protection to 1st and 2nd Order Streams and Transition zones. This writes off 41,000 acres of riparian habitat.

Page 63, Conclusions. Here, it is stated that snag-dependent wildlife is already below viable levels.

Although some old growth is provided on a temporary basis, this plan is a timber production plan to benefit timber companies and county governments. Even though it is stated that old-growth research is needed (page 25), no provision is made for it, and it is unlikely to occur under the present administration. In summary, this plan strongly supports the urgent need for revision or repeal of the O & C Act.

These remarks have been coordinated with William B. Morse, the Institute's Western Representative.

Sincerely,



Daniel A. Poole
President

DAP:libb



Oregon Natural Resources Council

— formerly the Oregon Wilderness Coalition —

Main Office, 271 West 12th Avenue, Eugene, Oregon 97401 (503) 344-0675

Jan. 4, 1983

Dwight L. Patton, District Manager
Eugene District, Bureau of Land Management
PO Box 10226
Eugene, Oregon 97420

Dear Mr. Patton,

This letter constitutes our comments on the Draft Environmental Impact Statement for the Eugene District Timber Management Plan. Please include them in the official record.

ONRC finds that reviewing the Draft EIS for compliance with the National Environmental Policy Act and subsequent policy would be futile exercise. Because of what we believe is an incorrect interpretation of the Oregon and California Lands Act of 1937, the agency has adopted a management framework which emphasizes timber at the expense of all other resources. Given the fact that the primary decision has essentially already been made and the alternatives which may be considered in the DEIS are very narrow in scope, ONRC feels it time may be used for productively. Below we are stating our views as to the correctness of the dominant use timber policy adopted by the BLM.

- 4-1** 1. The agency's interpretation of the O&C Act and the resultant policy direction is incorrect. The O&C Act was the first attempt to put the concepts of multiple use and sustained yield into statute. While perhaps not clearly written to define multiple use and sustained yield, the intent was clear. A multitude of statutes have been enacted since 1937, providing direction for the management of federal lands and the actions of land managers regarding fish, wildlife, environment, conservation, cultural resources, coastal zone management, air quality, water quality, recreation, soil, watershed, etc. Not one of these laws excluded the O&C lands from compliance.

Only in FLPMA was an exclusionary clause included. It's purpose was to protect the revenue formula for the 18 western Oregon counties, and was not intended to preclude multiple use on O&C lands. The record contains our detailed position on this matter.

4-2

2. The preferred alternative, if implemented, would be a clear violation of the Federal Lands Policy and Management Act. Some of the lands considered in this plan are public domain (not O&C) holdings. These lands are to be managed under the Federal Lands Policy and Management Act. Separate planning criteria and decision criteria must be developed for these lands. To use the O&C criteria (which we also believe are illegal) is clearly not permissible.

3. The preferred alternative would not be in compliance with the Wildlife Policy of the State of Oregon, as defined by the Oregon Legislative Assembly (ORS 496.012). We concur with (and suggest you review) the comments of the Oregon Department of Fish and Wildlife and the Oregon Fish and Wildlife Commission (October 22, 1982) regarding the proposed Coos Bay District decision on this matter.

Response to comments in Letter 3.

- 3-1 The Purpose and Need for the Action section of Chapter I has been revised to include the total public domain acreage on the combined SVUs. District resource inventories did not distinguish resource values between public domain and O & C lands. However, as the maps in the back cover pocket show, public domain lands on the Eugene District are small, scattered parcels that cannot contribute effectively to most resource management objectives except in conjunction with adjacent O & C grant lands. For example, management of lands exclusively for wildlife habitat would have a negligible contribution to maintaining habitat diversity, if no additional allocations were made.

The public domain lands are governed by the mandates set forth in the Federal Land Policy and Management Act. In the preferred alternative, proposed management for these lands complies with the multiple-use principles of FLPMA.

- 3-2 All alternatives provide for visual resource mitigation of forest management activities through incorporation of landscape design features. All alternatives would designate as Areas of Critical Environmental Concern those two areas identified as potential ACECs for outstanding scenic values. Alternatives 3, 4, 5, 7 and 8 include a 300-acre allocation for visual resource protection in the McKenzie River corridor. Significant acreages in Alternatives 9 and 10 are allocated for visual resource management.

- 3-3 The long-term impact to elk habitat in the new preferred alternative would be a 45 percent reduction. See common issue 2 for a clarification of the relationship between elk habitat and potential population numbers.

- 3-4 Most of these hardwood habitats would be converted to stands of young Douglas-fir following logging. This would reduce overall habitat diversity and reduce the carrying capacity of BLM forest for species oriented towards hardwoods. Population declines would be directly related to the rate and extent of hardwood loss.

- 3-5 As described in Appendix B of this document, large block areas are three to five hundred acres in size, at least half of which is old growth and the remainder, mid-aged seral stages.

4. The preferred alternative would violate rules of the Oregon Forest Practices Act. We concur with the comments of the Oregon Department of Fish and Wildlife and the Oregon Fish and Wildlife Commission (October 22, 1982) on this matter.

5. The preferred alternative would violate the Sikes Act and agreements entered into under authority of that Act with the Department of Fish and Wildlife. We concur with the comments of the Oregon Department of Fish and Wildlife and the Oregon Fish and Wildlife Commission (October 22, 1982) on this matter.

6. The preferred alternative would violate the intent of the Federal Endangered Species Act to have federal agencies cooperate to prevent the need to list species under that Act.

4-3 7. While ONRC supports the concept of old growth preservation for long-term timber production, it believes the recommended amount of old growth to be retained for the decade is grossly inadequate. A purpose was to maintain the genetic flow between patches of old growth. Upon what scientific basis was the decision based use the proposed spacing regime? It is our understanding that old-growth dependent small rodents and other species cannot travel the distances planned through cutover and young timber stands.

8. We concur with the "recommendations" of the Oregon Department of Fish and Wildlife and the Oregon Fish and Wildlife Commission (page 10, October 22, 1982) regarding the Coos Bay District decision. They apply as well to the Eugene District.

9. Given the serious questions raised about the ability of the agency to practice multiple use and sustained yield on the O&C lands, the EIS should consider the alternative of recommending to Congress that the O&C and Coos Bay Wagon Road lands be transferred to the National Forest System to be managed as other federal forestlands.

In conclusion, the preferred alternative not only is in violation of the above stated and other statutes, it would be a direct reversal of over a century of public policy to manage the people's lands for a variety of resources at levels which are sustainable. The Oregon Natural Resources Council strongly urges the Bureau of Land Management to substantially modify its preferred alternative.

Sincerely,

James Monteith
James Monteith
Executive Director

JM/ak

cc: Oregon Department of Fish and Wildlife
Oregon Wildlife Federation
National Wildlife Federation
Oregon Division, Izaak Walton League of America
Sierra Club
National Audubon Society
Lane County Audubon Society
Many Rivers Group Sierra Club
Save Our ecoSystems



Executive Department

155 COTTAGE STREET NE., SALEM, OREGON 97310

January 5, 1983

Dwight Patton, District Manager
Bureau of Land Management
District Office
P. O. Box 10226
Eugene, OR 97440

Subject: Eugene Timber Management Draft EIS
PNRS #OR821124-021-4

Thank you for submitting the subject draft Environmental Impact Statement for State of Oregon review and comment.

The draft was referred to the appropriate state agencies for review. The consensus among reviewing agencies was that the draft adequately described the environmental impact of your proposal.

We will expect to receive copies of the final statement as required by Council of Environmental Quality Guidelines.

Sincerely,

INTERGOVERNMENTAL RELATIONS DIVISION

Kay F. Wilcox

Kay F. Wilcox
A-95 Coordinator

KW:mh

Response to comments in Letter 4.

4-1 The interpretation of the O & C Act has been the focus of considerable debate since the beginning of the planning process for the four western Oregon BLM Districts scheduled to complete plans this year. As the planning process progressed, it became evident that policy clarification was necessary. BLM developed a draft policy statement based on the favored alternative developed for the Coos Bay District, scheduled as the first of the four Districts to complete planning. This policy statement was submitted to the Interior Department's Solicitor in May 1981. The Solicitor examined the policy in light of pertinent legislation and issued a legal analysis essentially indicating that the policy was within the law, providing minor revisions were made.

Because of the social and economic sensitivity of the local economy to changes in BLM timber production, a fine tuning of the original policy statement was undertaken. Initial refinement was provided by the Management Criteria issued in July 1982. An alternative derived from these criteria was included in the draft EIS for the Eugene Timber Management Plan as the preferred alternative.

The policy was fine-tuned following public and internal review. In addition, there was an October, 1982 amendment to the Endangered Species Act requiring consideration of State-listed species. The culmination of these refinements is the final version of the O & C Forest Resources Policy (Appendix R). Alternative 5 has been designated the preferred alternative in response to this policy.

4-2 See response to comment 3-1.

4-3 Table 3-9 analyzes the spacing regime for each alternative. See also common issue 4.

5



6

UNIVERSITY OF OREGON

January 12, 1983

Mr. Dwight Patton,
Director
Bureau of Land Management
1255 Pearl Street
Eugene, Oregon 97401

Dear Mr. Patton:

In response to your request that we put in writing our comments at this evening's meeting I would like to make the following points.

1. I appreciate that you suggest the establishment of Research Natural Areas in the sites specified for the long term maintenance of older growth trees in this lowland Douglas Fir forest, in most of the alternatives.

- These are needed for recording long term plant successional sequences.
- They will also serve in a small way to augment the need for old growth in terms of animal habitat. We might try to optimize the size of such patches of old growth as animal habitat by preserving more of the immediately contiguous lands toward these ends, but I realize that this may be too difficult to accomplish.
- This will certainly supply some of the needs for old growth habitats for plants.

6-1 2. I hope consideration can be given to a policy of increasing the number of species that are planted when cut over lands are replanted. We plant "only" Douglas Fir at our ultimate peril. The biological systems become too unstable when one species becomes a near monocrop, despite how economically attractive it is on a one or three generation basis. True, we may have chemicals to control almost anything. At what cost will be the control of some bacteria, fungus, beetle or round worm that evolves into this tremendous spread of Douglas Fir. We all know that from a biological-ecological point of view we need a mix. We simply don't know for sure what the lumber need of the future will be exactly. It may be that other species may be in demand a few decades from now. For instance I would urge using the Giant Tree, *Sequoiadendron giganteum* as indicated in Tom Burns 1971 M.A. thesis at the Department of Geography, University of Oregon. It does especially well on south slopes in our region. Mainly I refer to local species of forest trees planted in their ecological niche.

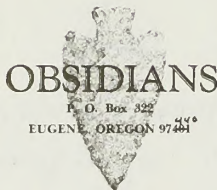
3. The apparent desire to cut no less than about 250 mbf under alternatives 1-8 seems to ignore the costs involved with such high harvest rates when it comes to problems of loss of water by runoff, soil slumps, and sediment loads in our streams, to rivers and estuaries. I have difficulty with imagining your figures are correct for the small differences you show for water and sediment loads suggested for 250 mbf timber harvest, one-half that in alt. 9 and one-fourth that in alt. 10. Societal costs will surely be greater than that implied in Table 3-5, especially in the Coast Range forests and in comparing alternative 4 and 9 or 10. With well over twice as much land cut over how can your predicted total water yield remain virtually the same? As far as I can tell the monetary value - the social cost-of the loss of soil in the Coast Range is not estimated in terms of watershed management and in the reduction of flooding while comparing the obvious value of four times as much timber harvested from the land. If your figures on sediment from coast cutovers are incorrect then we may have a much higher loss from salmon breeding disruption than is so far calculated for instance.

Sincerely,

Carl L. Johannessen
Carl L. Johannessen,
Professor

CLJ: dh

The word "Obsidian" is derived from the volcanic glass rock found in the Three Sisters Area. Obsidian was used by the Indians for the manufacture of arrow heads. The black Obsidian arrow head has been adopted by the club as its insignia. To qualify for active membership any person must make three trips with the club, which have been designated as qualifying trips, or climb to the summit of a snow-peak on which there is at least one living glacier, and the top of which cannot be reached by any other means than on foot.



The objects of this organization shall be to explore the mountains, lakes, streams and trails of the Northwest. It shall be our purpose to get together for mutual benefit those who find pleasure in mountains, forests or streams, to encourage our citizens to enjoy the outdoors and to see its value as a community asset. To promote expeditions into the mountains to develop the winter sports of skiing, snow shooting, etc. to preserve by all reasonable measures the natural beauties of forest, stream and other features of mountain scenery; to aid and assist as far as possible in the acquisition of the geological and biological information concerning our country.

January 13, 1983

Dwight Patton, District Manager
Bureau of Land Management
P.O. Box 10226
Eugene, OR 97440

Dear Mr. Patton:

Here are our comments on the Eugene District Timber Management Plan and Environmental Impact Statement.

The heart of the management plan is Appendix B Management Criteria. The District has developed a number of alternative timber management plans which incorporate some interesting concepts. However, the Management Criteria (Appendix B) severely limits the alternatives that could be used, rendering much of the plan as meaningless. Several alternatives are automatically eliminated. In a sense the criteria dictates that all land possible must be managed for maximum timber production. No real alternatives are permitted. Furthermore, all other resources and values will be considered only to the extent necessary to comply with minimum requirements under existing state and Federal laws; and no more.

The Eugene district is mostly good timber growing land. We believe that timber growing should be given a high priority on most of the district. However, we oppose the extent to which the emphasis is on timber and the sacrificing of all other resources and values to the benefit of a single use - timber. We do not believe that there is adequate protection of the other resources.

"Allowable cut levels will be based on the use of intensive management practices considered to be operational within a 20 year planning horizon." We oppose this concept of determining current timber harvest levels on questionable unproven management practices. Furthermore, there is no assurance that there will be sufficient funding to apply all of the intensive practices even if they do work.

Herbicides: How solid is the research or empirical data upon which to base the benefits from the use of herbicides? Considerable controversy exists as to whether herbicides should in fact be used at all.

Response to comments in Letter 6.

6-1 The vegetative composition which currently exists in the SYUs is described in Chapter 2, Vegetation. Chapter 3 describes the Impacts on Vegetation associated with the different alternatives (see Tables 3-7A, 3-7B and Appendix D). The artificial regeneration program on BLM-administered lands is not expected to significantly affect the stand or species composition of the entire Eugene area.

Dwight Patton, District Manager

January 13, 1983

7-2 Tree Improvement: Again we question what evidence, research or empirical data exists on genetic tree improvement that is sufficiently valid upon which to base an increase of the cut. This too, is controversial because no one really knows the extent of possible adverse side effects and trade-offs. We believe in continued research on genetic improvement but no large scale use of this unproven technique. Theoretical benefits of genetic improvement should not be used in allowable cut calculations.

Fertilizer: This is a third questionable practice. Energy costs keep increasing. This causes increase costs of fertilizer. The use of fertilizer may not be cost justified. It also may become difficult to justify this use of fertilizer on trees where elsewhere people do not have enough to eat.

The preferred alternative is not realistic, nor is it being fair to future generations who will inherit more depleted soils, reductions in timber and wildlife inventories, or other unforeseen adverse effects.

7-3 What allowances are there in the allowable cut calculation for outbreaks of insect and disease infestations, for fire, for plantation failures or for human errors?

The Seral Stage distribution concept as used in the preferred alternative appears reasonable and logical. We applaud the recognition of the need to save some old growth. However, the amount to be saved is so miniscule. Also, the East-West corridor concept is good in order to help maintain biological diversity. These concepts should be used in the final alternative.

Conclusion: All aspects of alternatives 1, 2, 3, 6 and 7 should be rejected. The Seral Stage concept of alternative 4 and the East-West corridor of 5 should be incorporated and blended with alternatives 8 and 9. We also feel that there needs to be additional old growth. Alternative 10 is apparently shown as an academic exercise. It is unrealistic to assume that the BLM would give it serious consideration.

We feel that it is morally and environmentally wrong to base the allowable cut on use of herbicides, fertilizer and tree improvement. There is a miserly allocation of land to recreation and scenic values. More land needs to be maintained in old growth. Finally, there needs to be substantially less emphasis on timber and more on the other resources.

R. Marriner Orum
R. Marriner Orum

United States
Department of
AgricultureForest
ServicePacific
Northwest
Region319 S.W. Pine 8
P. O. Box 3623
Portland, OR 97208

Response to comments in Letter 7.

7-1 See common issue 1, budget assumptions.

Reply to 2410

7-2 The BLM has a tree improvement plan developed specifically for western Oregon. The Western Oregon Tree Improvement Plan has been prepared using the best empirical data and genetic theory available to date. Potential adverse side effects have been considered, and safeguards for many of these have been built into the tree improvement plan. In order to make final tree selections, the Eugene District will use empirical data collected from 28 progeny test sites, representing over 1000 parent trees. Additional test sites will be established to evaluate parents for use in future generations of improvement.

Date January 12, 1983

7-3 Catastrophe is not predictable. The Bureau's allowable cut plan is updated every 10 years, reflecting the most current inventory. Catastrophic change mandates immediate reassessment and could result in adjustment of the allowable cut.

Plantation failures, if other than catastrophic, widespread loss, are considered in the determination of a "regeneration lag" period--four years in this Eugene plan. This is identified in large part by the "non-stocked" acreage indicated in Table C-1, Appendix C.

Mr. Dwight Patton, Eugene District Manager
Bureau of Land Management
District Office
P. O. Box 10226
Eugene, OR 97440

Dear Mr. Patton:

Thank you for the opportunity to review the Eugene Timber Management Draft Environmental Impact Statement.

We have no substantive comments to offer in our area of expertise or jurisdiction.

Sincerely,

Jeff M. Sirmom
JEFF M. SIRMOM
Regional Forester



FS-6200-11b (7-81)

9

Department of Forest Science
Oregon State University
Corvallis, Oregon 97331
15 January 1983

Dwight Patton, District Manager
Bureau of Land Management
P.O. Box 10226
Eugene, Oregon 97440

I am writing concerning the Eugene District's Draft Environmental Impact Statement for the Timber Management Plan. I am very disturbed by Secretary James Watt's decision to restrict land from long rotation ~~man~~ (>300 years) management for wildlife habitat. I strongly urge you to reconsider the preferred alternative. It is critical that old growth habitat be maintained for wildlife on O+C lands on the Eugene District. It is also important that snags be left on a site when it is cut. Many species of wildlife rely on snags. It would be very helpful if the final environmental impact statement included a list of wildlife species on the district, their federal and state status, and their habitat needs.

9-1

All riparian habitats should be given full protection. This should include leaving large trees in the buffer strips. These large trees are important in maintaining stream structure and temperature.

9-2 It has come to my attention that 14 Areas of Critical Environmental Concern were eliminated from consideration. No detailed justification was provided for elimination of these areas. I strongly urge you to provide protection for all ACECs. I would also like a map pinpointing the location of these areas to be included in the Final EIS.

Your consideration of these comments will be greatly appreciated. Thank you,

Sincerely,
Glenn Furmer

Response to comments in Letter 9.

9-1 The Federal and State status of wildlife species on the Eugene combined SYUs is described in the Threatened and Endangered Animals section of Chapter 2. A complete list of wildlife species and some information on their habitat requirements is available in the Eugene District Office.

9-2 There are no designated Areas of Critical Environmental Concern on the Eugene District at this time. During March 1981, a District interdisciplinary team evaluated 21 areas nominated for ACEC designation both by the public and BLM according to the identification criteria derived from the Federal Land Policy and Management Act of 1976. Guidelines for this identification are described in final regulations issued in 1980 (see USDI, BLM 1980d). Opportunities for nomination by the public were solicited in 1980. Potential ACECs were identified in brochures summarizing land use alternatives in April 1981 and March 1982, both of which were issued for public comment. The decisions of the ACEC team are detailed in a March 1981 document available at the Eugene District Office. A number of management options for resource values in areas nominated but not identified as potential ACECs are incorporated into the EIS alternatives. These areas are listed in the footnote to Table 2-11.

Jan 17, 1983

Dwight Patton, District Mgr.
Bureau of Land Mgmt
POB 10226
Eugene, OR 97440

Dear Sir,

(Re: Eugene Draft EIS Timber Plan)

I am very opposed to the preferred alternative,
which would cut old growth crucial for wildlife habitat.

Species such as the spotted owl, bald eagles, and other
old growth forest-dependent wildlife would be adversely
affected.

Multiple use applies to O+C lands. Mr. Watts' interpretation
is incorrect, and in yet another act in a long sequence
of his actions violating the public trust.

Sincerely,

Joe Yushka
Joseph Yushka
840 NW 9th #9
Corvallis, OR 97330



NORTH WEST TIMBER ASSOCIATION

1355 OAK STREET • P.O. BOX 5554 • EUGENE, OREGON 97405
TELEPHONE (503) 686-9603

January 13, 1983

Dwight L. Patton, District Manager
Bureau of Land Management
P. O. Box 10226
Eugene, OR 97440

Dear Mr. Patton:

On behalf of the members of North West Timber Association (NWT) I am pleased to submit comments on the "adequacy" of the Draft Environmental Impact Statement (DEIS) for the Eugene Timber Management Plan. NWT consists of small independent lumber and plywood manufacturers who are almost exclusively dependent upon western Oregon federal timber for their raw material supplies. Several of our members purchase Eugene District timber; and therefore, will be directly affected by the results of your planning effort. Timber supply remains the key issue facing our industry. To a great extent the current economic condition of the industry is the result of past timber supply policies, and our ability to recover and stabilize will be a function of the policies on federal timber supply decisions.

Our organization is pleased to see the addition of Alternative Four which reflects the administration's renewed commitment to the O & C law as reflected in the Director's Criteria. We believe that this general approach properly places the needs of people in high priority and provides the much needed emphasis on maintaining the economic base of Oregon. We are disappointed that the Bureau of Land Management (BLM) has not fully accepted the opportunities that exist under the new approach to manage for a wide range of outputs, most notably wildlife. Rather, the EIS gives unjustified emphasis to doom and gloom predictions from the crystal ball of the wildlife preservationists, while downplaying the positive economic impacts. The output predictions of the wildlife analysis are very difficult--if not impossible--to accept based on the information presented in the EIS. In terms of cause and effect predictions, wildlife biology is in its very infancy and can hardly be considered a science. The precise predictions of the effects on wildlife of various alternatives cannot be justified since they are little more than "opinion" based on guesses, not facts. Certainly the predictability of causes and effects generated by wildlife biology cannot be compared with those of forestry, and to a lesser degree economics, where many years of studies and results demonstrate a reasonable level of assurance in prediction.

Dwight L. Patton, District Manager -2-

January 13, 1983

The most controversial element of the planning and decision process deals with the allocations of mature and old-growth timber stands for wildlife habitat and the effects on wildlife. We believe that the very narrow perspective taken by the BLM is in error and that changes are needed in the EIS.

LAND ALLOCATIONS

While the decision criteria do not permit the allocation of specific commercial forestland for wildlife habitat preservation of non-threatened and endangered species, they do allow and encourage the use of lands withdrawn for other uses to be used for wildlife. Over 21,500 acres of commercial forestland on the District have been withdrawn from the production base due to fragile soils or reforestation problems. Additionally under most alternatives, including maximum timber, over 8,000 acres of riparian areas (the most productive wildlife habitats) have also been withdrawn from production. This nearly 30,000 acres represents a distinct opportunity to provide for mature, old-growth, and specialized wildlife habitat on the Eugene District.

11-1 The final EIS should specifically discuss these lands and the opportunities that they present. How many of these acres currently have mature or old-growth habitats? How many could be managed to produce such habitats? An analysis of potential wildlife outputs should look at a range of alternatives for these acres from simply habitat preservation to a full intensive wildlife management program.

11-2 Further, the EIS should recognize the vast acreages of mature and old-growth that exist on adjacent Forest Service land which is totally protected or not scheduled for harvest for several decades.

OLD-GROWTH/WILDLIFE PREDICTIONS

At the base of the entire controversy over BLM planning is the assumption of old-growth dependency and non-adaptability of some animal species, most notably the spotted owl. Industry has no desire to see the owl or any other animal endangered; however, we cannot accept the strict habitat relationships that dominate the wildlife predictions. We do not believe that the research to date justifies the habitat requirements that have come from the non-interdisciplinary reviews such as the Spotted Owl Task Force. The inclusion of Federally listed Threatened and Endangered species and State listed species in the same discussion (page 29) is improper. While Federal listing comes only after an in-depth review of the facts, no critical review process exists for State listings. The U. S. Fish and Wildlife Service, in its 1982 Status Review of the Spotted Owl, confirmed that the species does not qualify for Federal listing.

The data presented in the EIS only tends to confirm our concerns. The data indicates that the District currently has 42 pairs of spotted owls on 48,425 acres of old-growth habitat, or one pair per 1,152 acres. It hardly seems possible that the distribution of the old-growth is so perfect at this time as to meet the strict habitat requirements assigned to the owl.

Dwight L. Patton, District Manager -3-

January 13, 1983

11-3 When one turns to the predicted impacts, however, the disappearance of the owl is forecast despite the old-growth acres. It is forecast that no spotted owls will remain on District lands in a hundred years under Alternatives One, Two, or Three, and only one pair under Alternative Four, despite the fact that between 8,900 and 16,400 acres of old-growth will exist at the end of the same period.

11-4 These apparently irrational predictions result from the very strict assumptions about the minimum habitat needs and distributional requirements assigned to the owl. These assumptions are all based on limited observations of what the owl uses and not what the owl needs. Intensified research is needed to identify what elements of the habitat are really key to the healthy survival of the owl and, once identified, to develop management alternatives to provide these elements in the most efficient manner. Unfortunately, current research is not directed toward such solutions. The Final EIS should recognize the research needs and clearly point them out as well as the weakness in the current assumptions.

ELK HABITAT AND POPULATION ASSUMPTIONS

11-5 The EIS predicts significant decreases in elk populations based on survival cover assumptions which are little more than speculation. The claim that elk need 37 percent of their habitat in mature timber contradicts the observations of experienced hunters and wildlife managers alike. The elk predictions are expressed only in percentages without ever discussing the actual numbers involved. The Wildlife Biologist at the Eugene District open house held December 15, 1982, indicated that the present population is estimated at about 500 animals on the District. More importantly he also indicated that under an elk management program the population could be greatly increased in the short run. This completely conflicts with the predictions in the EIS (Table 3-11) which predicts up to 40 percent decreases in the short term. It was also indicated that no elk management activities were considered other than land allocations because "...this is a timber management plan." This is an unacceptable approach.

11-6 It is also noteworthy that the EIS does not consider the greatest impact on elk populations--hunting. Neither does it discuss road closure policy; the frequency and populations effects of severe storms in relation to the real importance of survival cover; or the marginal cost in terms of dollars, jobs, and timber supply of producing one more elk!

MANAGEMENT OPPORTUNITIES IGNORED

While the document and decision may be placed in the context of a timber management plan, it is clear that all outputs of the District are involved and management programs should be considered and evaluated in the EIS. This is especially true in the area of wildlife. Just as we have learned--and continue to learn--that we can manage the fisheries resource through a combination of habitat protection, habitat enhancement, and direct animal management, so the same approach should be considered for other wildlife.

Dwight L. Patton, District Manager -4-

January 13, 1983

Rather than predicting the demise of the spotted owl, why hasn't the BLM sought management alternatives? How nice it would be if we found that a hundred acres around the nest tree with intensive management of the adjoining areas to increase flying squirrel and rodent populations would meet the needs of the owl.

For elk, opportunities may exist to provide supplemental feed during the periodic heavy storms or to close certain roads during excessively hot summer periods in order to provide unharassed access to riparian zones for the elk.

While such approaches may not sit well with the habitat-oriented wildlife biologists, they do represent potential socially and economically efficient resolutions to the problems. Further, they are within the guidance provided in the Director's criteria.

- 11-7** Research is clearly the missing element. The selection of an alternative such as Deferred Harvest (Alternative Three) or the Seral Stage Distribution will maintain habitat while research is undertaken. The necessary push and funding must come from the BLM and other affected agencies.

The Final EIS should discuss management opportunities and lay out the research and management technique development activities that are needed over the next decade.

ECONOMIC ANALYSIS

While the economic portion of the EIS is much improved over earlier BLM efforts, following are several recommended changes for the Final EIS:

11-8

1) The blanket assumption that necessary funding and manpower will be available for any alternative continues to be a major concern. The Final EIS should display the funding levels for each alternative and compare it to current levels. How this will fit into the overall western Oregon BLM budget needs, as well as, the probability of receiving the needed funding should also be discussed. The effects on the harvest level of receiving various levels of funding below the assumed level should be displayed for each alternative.

2) The approach to community stability and job impacts appears oriented toward trying to minimize the effect of the BLM decision. It matters little if the effect of a change in the harvest level occurs in a town where timber is the sole economic activity or in a city where it is only 15 percent of the activity. One less job is one less job in either case. The bottom line is still that each million board feet of harvest from the Eugene District will either provide for 30-odd western Oregon jobs or it will take those jobs away.

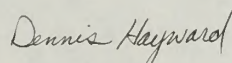
Attempts to downplay the economic impact by comparing the BLM's harvest to all local harvests is little compensation to the mills dependent upon public timber or to the unemployed worker--young or old.

Dwight L. Patton, District Manager -6-

January 13, 1983

The continuing opportunity to participate in your planning activities is appreciated.

Sincerely yours,



Dennis Hayward
Forester

1m

Dwight L. Patton, District Manager

-5-

January 13, 1983

11-9

3) Opportunity costs should be included in the EIS. Economics should be a part of each section of the analysis. The wildlife discussion should include a full disclosure of the economic impacts of the various habitat schemes. The cost of providing 300 or 1,000 acre habitats for a pair of spotted owls should be displayed, as well as, the marginal cost of producing one more elk for the hunter or one more fish for the fisherman.

4) Because of the distribution formula for O & C receipts to the counties, the harvest determination has a significant effect on other counties. The effect on county governments throughout western Oregon should be discussed in greater detail.

MINIMUM HARVEST SIZE

11-10

While we do not necessarily disagree with the determination to use 12 inches or about 40 years as the minimum harvest age for the Eugene District, we do feel it would be appropriate to document in the EIS how this decision was made, as well as, displaying the effect on the harvest level of using 50 and 60 years as has been considered on other districts. Also the budget requirements and intensive management activities needed to obtain this minimum should be reviewed.

SERAL STAGE DISTRIBUTION

11-11

The implementation of the Seral Stage Diversity concept has been a concern to industry as expressed in other correspondence. Basically we question whether adequate data really exists to indicate that the relationship of old-growth to long term productivity of commercial forestland is really in question. Indeed with the vast expanses of old-growth timber in western Oregon both in withdrawn areas such as wilderness, and simply in inventory and not scheduled for harvest for one to several decades, the opportunities to study a wide range of old-growth conditions is expansive. Even under your maximum timber alternative over 25,000 acres of the District's old-growth inventory will remain at the end of one decade. In short, the Seral Stage Distribution scheme is not adequately justified with a few "maybes" and "perhaps's."

Considering the wildlife data gap there is a reasonable need to do extensive studies in the old-growth eco-system in order to develop the proper management tools. This would seem better handled in the Deferred Harvest (Alternative Three) which gives direct recognition of the present location of the owl populations, preserves a maximum habitat allocation while at the same time continuing harvest levels with a commitment to resolve the management problems over the next decade. This alternative would be quite reasonable for a proposed decision in the Final EIS provided the research, development goals, and plans were clearly laid out for the public. The goal should be to eliminate the need for maintenance of the vast habitats by substituting progress and creative wildlife management practices.

Response to comments in Letter 11.

- 11-1** The Eugene District's proposed Management Framework Plan includes wildlife land use allocations that encompass TPCC lands and riparian zones on stream orders 3 and above. These allocations call for management practices that maintain or improve wildlife habitat quality on these lands. The TPCC lands include about 7,000 acres of mature and old growth habitat; riparian areas, about 2,000 acres of this habitat. Benefits from these allocations and proposed management practices are aggregated in the analysis of impacts on wildlife habitat for the entire District. See the discussion on mitigating measures in common issue 2, and the revised Forest Management Treatment and Design Elements section in Chapter 1.
- 11-2** Table 2-7 in the draft EIS was incorrectly titled as representing seral stage habitat proportions on the lands only within the Eugene SYUs. As the text in that section and the corrected table show, the information provided is an estimate of these habitat proportions on all lands within Lane County and the southern one-third of Linn County, including Forest Service jurisdictions. However, it is not within the scope of this EIS to predict harvest schedules on lands not under BLM administration.
- 11-3** The Impacts on Animals section in Chapter 3 has been revised to indicate that short and long-term impacts to northern spotted owl populations in Alternative 3 would be approximately the same as those for Alternative 7, assuming that the acreage deferred from harvest in Alternative 3 would not be harvested after the first decade. See common issue 2 for the relationship between owl populations and old-growth acreage.
- 11-4** The Oregon Interagency Spotted Owl Management Plan recognizes the need for additional research and management alternatives. These are both long term efforts in which BLM will be involved. See common issue 2.
- 11-5** Additional information is provided in the EIS narrative and in common issue 2. Table 3-15 in the DEIS was incorrectly described in that the data it presented referred to habitat, not populations.
- 11-6** At present, the greatest impact on elk populations is habitat degradation associated with the cumulative effects of loss of cover and human harassment. The latter is a function of intensive roading and uncontrolled public access.
- 11-7** As the EIS indicates, only Alternatives 9 and 10 will maintain all wildlife habitats at, or above, current levels; however, Alternatives 3, 4, 5, 7 and 8 will preserve a variety of habitat management options while research continues.

11-8 See common issue 1.

11-9 See common issue 3.

11-10 Harvest in the coming decade is constrained by BLM policies governing sustained yield and the provision of a non-declining, even-flow of timber. In estimating an even-flow level, the Bureau calculates the maximum volume of merchantable timber which could be harvested beginning in this coming decade and sustained for 400 years. Given the age class distribution of timber on the Eugene District, timber harvested in the next few decades will average 20 inches and greater. Because of an imbalance in age classes, the average diameter of timber harvested in subsequent decades will fall and then rise as the age class distribution on the intensively managed land base becomes more evenly balanced. Minimum harvest size is a lower bound on the average diameter of all stands scheduled for final harvest in any future decade. Beginning 40 to 70 years from now, harvest size becomes the constraint which restricts harvest levels today. For any alternative evaluated, a higher minimum harvest size constraint would translate into reduced timber output. Increasing the minimum harvest size from 12.9 inches (text in Chapter 1, Alternatives Including the Proposed Action, has been revised) to 16.4 inches, the diameter expected in the 50 year age class, would reduce harvest in the coming decade by 4 percent. Increasing the minimum harvest size to 19.6 inches the diameter expected in the 60 year age class, would reduce harvest in the coming decade by 12 percent.

The 12.9-inch minimum harvest size was chosen because it provides the greatest level of harvest in the decades of the 80s and 90s which are projected to be periods of shortage in timber supply (Beuter et al. 1976, Stere et al. 1980). Providing 12.9-inch diameter material beginning in 2020 is consistent with other projections of the type of timber Oregon industry will be processing in those decades (Tedder 1979).

11-11 See common issue 4.

Mr. Dwight Patton
January 18, 1983
Page Two

12-1 The inference that alternatives 1 through 4 do not provide "multiple use" is both misleading and inaccurate. All of the alternatives offer a variety of recreational experience, water, timber production, wildlife habitat, protection of cultural resources, protection of federally-listed threatened and endangered species, protection of fragile sites, protection of forest lands with reforestation problems, and some degree of visual management. These are all "multiple uses". To say that some of the alternatives do not provide "multiple use" is an extremely biased and subjective judgment.

The description of environmental impacts also appears to be very biased, most notably the alleged effects of the Preferred Alternative on wildlife. Pages 55 through 60 describe the adverse impacts that no less than 13 different timber management practices may have on wildlife. Road construction, human intrusion, clearcutting, commercial thinning, skidding logs, removing snags, salvaging mortality, altering riparian zones, converting hardwoods to conifer stands, burning slash, piling slash, herbicide application and precommercial thinning will all have adverse impacts on wildlife according to the narrative information presented in the DEIS. No quantitative data are included to support these conclusions. The most disturbing aspect of the analysis, however, is the absence of any narrative description of the positive impacts each of these treatments has in terms of enhancing productivity, generating employment, providing income to the counties, etc. Tables are provided, of course, showing the relative economic effects of each alternative in general, but the item-by-item "dressing down" of forest management practices and their impact on wildlife is not balanced with a similar discussion of the benefits of the practices. Likewise, no discussion is included of what it would cost in terms of jobs, income and community stability if each of the measures suggested by the wildlife biologists were implemented. The net result of this biased approach is that the Preferred Alternative, and alternatives emphasizing timber production, are made to look environmentally undesirable in relation to their respective social and economic impacts in the final EIS should provide equal treatment to both environmental and economic impacts in the narrative portion of the document.

12-3 Also missing from the discussion of the Preferred Alternative are the tradeoffs associated with reducing the intensive timber production base from 294,695 acres under the existing plan to 271,831 under the Preferred Alternative. The loss of 22,864 acres from full timber production is a significant decision and should be fully addressed in the EIS. The fact that the BLM is proposing to increase timber production by 11 million feet from 88 fewer acres magnifies the importance of this discussion. Following the example of other districts in western Oregon, the Eugene District is proposing to place significant amounts of commercial forest land into non-productive land categories and then "make up" the loss of productivity with larger investments in intensive forest management practices. The impacts of this tradeoff should be fully disclosed in the EIS. The analysis should address the BLM's expected income during the planning period compared to the increased expenditures necessary to effectuate the tradeoff.



WESTERN FOREST INDUSTRIES ASSOCIATION

1500 S. W. TAYLOR STREET • PORTLAND, OREGON 97205
TELEPHONE 503-224-5455

January 18, 1983

Mr. Dwight Patton
District Manager
Bureau of Land Management
P. O. Box 10226
Eugene, Oregon 97440

Re: Eugene Timber Management Draft Environmental Impact Statement

Dear Mr. Patton:

Western Forest Industries Association (WFIA) appreciates the opportunity to comment on the Draft Environmental Impact Statement (DEIS) for the proposed Eugene District Timber Management Plan. Our association represents approximately 100 manufacturers of lumber and plywood with mills located throughout several western states. All of our members are extremely dependent on timber produced on public forest lands including Bureau of Land Management lands in western Oregon. Therefore, our interest in your planning effort is quite intense.

Our comments will focus on four general areas of concern. First, we wish to comment on the Preferred Alternative and the manner in which it is addressed in the DEIS. Second, the issue of old growth preservation for wildlife habitat is one of our major concerns. Third, timber management activities and the relative economic impacts that will be addressed. Last, we wish to submit our recommendations for selecting a proposed action as part of the final EIS planning step.

The Preferred Alternative

We view the Preferred Alternative described in the DEIS as a vast improvement over the original proposed action (OPA) both in terms of compliance with the resource management requirements of the O & C Act and responsiveness to local social and economic conditions. However, the manner in which the Preferred Alternative is described and environmental impacts are assessed is extremely biased and potentially misleading to the lay public. For example, in assessing the compliance of each alternative with LDCG Statewide and Local Goals (Table 1-4) the statement is made that alternatives 1 through 4 emphasize timber production while alternatives 5 through 10 provide "multiple use".

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January 18, 1983
Page Three

Old Growth Preservation - Wildlife Habitat

The Preferred Alternative described in the DEIS proposes a seral stage distribution concept in the form of large and small blocks of old growth timber located throughout the district. The alleged purpose of the scheme is to preserve representations of old growth timber in case it is determined some time in the future that old growth ecosystems are somehow necessary to maintain productivity of our timberlands. There are two major flaws in how the DEIS addresses this subject. First, no documentation is provided to affirm the theory that old growth ecosystems are necessary to maintain the productivity of future stands. The only specific function of the old growth ecotype mentioned in the DEIS is the inoculation of mycorrhizae by rodents. Yet, artificial mycorrhizal inoculation is a very common practice in seedling nurseries today. The DEIS makes no mention of any other "process" that may only be duplicated in an old growth ecosystem. The second, more significant, flaw in the seral stage distribution concept is that old growth timber on the Eugene District will be in plentiful supply for decades to come under nearly every management alternative. According to data displayed in Table 1-3, even the Maximum Timber Alternative would result in 26,300 acres of old growth at the end of the planning period and nearly 9,000 acres would remain after 100 years! The fact that 10 new plans are scheduled between now and 10 decades from now makes the withdrawal of 4,000 acres of old growth, today, to maintain a representation of old growth unwarranted. These data clearly refute the statement made on page 54 of the DEIS that, "Alternatives 1, 2, 3 and 6 would not meet the criteria to provide an adequate representation of the original old growth systems over the short or long term". The fact is, old growth timber is not a scarce resource on the Eugene District. It is a resource that will be found in abundance for decades to come. Plenty of old growth will be available for intensive study without the seral stage distribution proposal.

12-6 Given the fact that old growth habitat will be found in abundance during the life of the plan, the wildlife population changes predicted to occur as a result of habitat alteration are questionable. For example, under the Preferred Alternative, 16,400 acres of old growth will remain after 10 decades compared to 22,300 acres under the original proposed action. Yet, assuming the 300 acre core area strategy is sufficient, the DEIS states that the new Preferred Alternative will support only one pair of spotted owls while the original proposed action will support 19! These predictions are illogical and are exemplary of the biased approach taken in analyzing the new Preferred Alternative and others emphasizing timber production.

12-7 Similar arguments can be made relative to predicted elk populations under the various alternatives. No documentation is displayed to explain why elk numbers would fall by the significant amount suggested in the DEIS. While thermal cover and escape cover are cited as necessary habitats for elk, there is no documentation for why old growth is the essential element in

Mr. Dwight Patton
January 18, 1983
Page Four

providing these habitats. There isn't even any data presented on existing elk populations. Indeed, the basic foundation of any resource plan is the inventory of existing resources. The entire discussion of how wildlife inventories were performed is contained in one sentence on page 88 of the DEIS:

"Wildlife biologists classified habitat types within the District and performed field inventories on selected species including northern spotted owl and bald eagle".

12-8

How the inventory was performed, the accuracy and confidence level of the inventory, the specific species that were inventoried and the time period during which the work was performed are not even mentioned. Is the reader supposed to accept with blind faith that the biologist's doomsday predictions are in fact accurate when the DEIS doesn't even address how the basic data were collected? The lack of discussion on inventory procedures is a major flaw that must be corrected in the final EIS. To display the type of data that are shown in Table 3-15 and to cite the source as simply "BLM District Personnel" are not sufficient for an EIS.

In general, the DEIS for the Eugene District is quite similar to earlier documents from other districts in terms of its discussion on wildlife and old growth habitat. It is written in a very biased manner, lacks objectivity, is loaded with subjective statements not documented by research and fails to explore alternatives to managing wildlife other than habitat preservation.

Timber Production - Economic Impacts

As previously mentioned, it was very disturbing that timber production and associated activities did not receive an item-by-item analysis of the economic benefits they provide as was done to describe the environmental impacts they have on wildlife. The three paragraphs dedicated to describing "Impacts on Economic Conditions" (page 69) is, in our estimation, inadequate to properly emphasize the importance of timber production to the EIS area's economy. Most disturbing, however, is the inference made on the one-half page which addresses the social aspects of the timber management plan that jobs lost because of implementing this proposal may not be socially significant. No documentation is provided to substantiate the allegation that younger wood products workers are single, better educated, live in larger communities, have alternative job skills or can be absorbed into other occupations near their homes. Perhaps the BLM wishes this were true, but without documentation it must be viewed as wishful thinking.

12-9

An assumption made in the discussion of social impacts is that all mills would share equally in any timber supply reduction caused by this plan. This assumption surfaces on pages 71 and 72 in the discussion of older stable workers as opposed to younger workers where the statement is made that alternatives 1 through 8 would affect younger workers only. The BLM appears to have assumed that a 15% reduction in timber supply, for example, will result in all mills curtailing production by similar amounts rather than one mill closing permanently. The latter occurrence is more likely than the former. In the

12-10

Response to comments in Letter 12.

12-1 Table 1-4 has been revised.

12-2 Tables 3-9, 10, 11, 12 and 15 and accompanying narrative present considerable quantitative data. Additional text citations have been added to the FEIS text to aid the reviewer. For example, Lang (1980b) describes the impacts of 17 silvicultural treatments on 6 aspects of wildlife habitat structure and summarizes reported requirements for, or utilization of, these habitats by 193 wildlife habitat species. The report indicates that many timber management treatments have negative impacts on specific components of natural, early seral stage habitats, such as snags, down logs, dense shrub canopies and hardwood tree species. The report also identifies that adverse impacts to wildlife occur as a direct result of seral stage truncation due to intensive timber management treatments.

Although there are benefits to some wildlife species as a result of silvicultural treatments, the data indicate the need for constraints on the extent of application if other species are to be retained. A number of mitigating measures to offset these impacts have been identified and are incorporated to varying degrees in the alternatives presented.

See the common issue 2 for a description of how data were derived and for a discussion of mitigation and management alternatives for wildlife. The Forest Management Treatment and Design Elements section of Chapter 1 has been revised to include a discussion of wildlife mitigation.

12-3 See common issue 3.
12-4 See common issue 1.
12-5 See common issue 4.
12-6 See common issue 2.

12-7 See response to comment 11-5 and the elk discussion in common issue 2.

12-8 Common issue 2 explains inventory and analysis procedures.

12-9 Stevens (1980) should have been cited in this section of the draft EIS. See revised Impacts on Social Conditions, Chapter 3.

12-10 See revised Impacts on Social Conditions, Chapter 3.

Mr. Dwight Patton
January 18, 1983
Page Five

face of a dwindling supply of raw material, the weaker, less efficient mill will most likely close completely. In this case, both younger and "core work force" workers will be disrupted. The BLM's assumptions about how the industry will respond to changes in timber supply are illogical. If a decline in supply occurs, a company can't simply lay off all the young, low-skilled, seasonal workers on the green chain. Even minor changes would displace, or add, workers from the "core work force" group.

The point here is that any reduction in employment opportunities caused by the Eugene District's timber management plan must be viewed as a very serious consequence. Whether the loss of employment occurs in Noti, Sweet Home or Eugene or in the young, low-skilled group or the "core work force" group is totally irrelevant. The final EIS should treat this subject with more depth. By the way, which work group do BLM employees fall into?

Recommendations For Final EIS

In addition to the recommendations already suggested in this input, WFIA recommends that the Final EIS support a new alternative as the proposed action. The new alternative should be one that closely resembles the Maximum Timber Alternative described in the DEIS. Maximum Timber is most consistent with the management requirements of the O & C Act, it best meets the goals of the Forestry Program for Oregon, it is most responsive to the needs of timber-dependent communities, it is in compliance with House Memorial #1 (see attached) passed by the 1981 Legislature, and is consistent with nearly all of the decision criteria displayed on page 88 that were used to select the original proposed action. It must be kept in mind that the plan is subject to revision at any time and will, in fact, be completely redone every ten years. Ample opportunity will therefore be available to correct and mitigate any unanticipated impacts caused by the plan.

The BLM should make a conscious effort to write the final EIS in a more objective and factual manner. The DEIS is very biased and lacks documentation for several predicted impacts of the Preferred Alternative as well as others.

WFIA appreciates, again, the opportunity to provide comments to the DEIS and looks forward to participating in the remainder of the planning process.

Sincerely,

Jim Geisinger
Jim Geisinger

cc: Mr. Robert Burford
Mr. William Leavell
Miss Pat Amedeo

LCOG **13**
Lane Council of Governments
NORTH PLAZA LEVEL PSB 125 EAST EIGHTH AVENUE EUGENE OREGON 97401 TELEPHONE (503) 687-4283

January 19, 1983

Frank Schillen, Associate District Manager
U.S. Department of the Interior
Bureau of Land Management
1255 Pearl Street
Eugene, OR 97401

SUBJECT: AREAWIDE CLEARINGHOUSE REVIEW
TITLE: Eugene Timber Management (EIS)
CLEARINGHOUSE NUMBER: 2E63

Thank you for the opportunity to review the Eugene Timber Management Draft Environmental Impact Statement (EIS). L-COG makes no comment on the EIS. However, Lane County expresses its concern that it did not have sufficient time to review the document in a thorough and comprehensive manner.

Sincerely,

JoAnn McCauley
JoAnn McCauley
Information Coordinator
OS:jm/W1



United States Department of the Interior

GEOLOGICAL SURVEY
RESTON, VA. 22092

14

In Reply Refer To:
EGS-Mail Stop 423

JAN 17 1983

Memorandum

To: District Manager, Bureau of Land Management
Eugene, Oregon

From: Assistant Director for Engineering Geology

Subject: Review of draft environmental statement for ten-year timber management plan, Eugene District, Oregon

We have reviewed the draft statement as requested in your notice.

14-1

Because at least parts of the area overlies significant aquifers, the EIS should address the possibility of long-term effects of planned activities on ground-water resources, particularly on ground-water recharge.

James F. Devine
James F. Devine

Martha Teich
330 Sunset Drive
Eugene, OR 97403

15

January 20, 1982

Mr. Dwight Patton, District Manager
Bureau of Land Management
District Office
P.O. Box 10226
Eugene, OR 97440

Dear Mr. Patton,

As a concerned citizen having no allegiance to any interest group which may or may not have had representatives present, I attended the BLM's public meeting on Wednesday, January 12, 1983. My purpose in attending was to gain insight into the impact of the various alternatives proposed in the EIS through what I had hoped would be spirited comment from representatives of the public as well as the BLM. My concerns at the conclusion of this meeting were two-fold.

To begin with, instead of welcoming or encouraging comment from the public and making it a part of the public record, BLM representatives in charge of this meeting repeatedly stated that the purpose of the meeting was simply to answer questions concerning the various proposed alternatives and not to make public comments a part of the record. This approach was very effective in cutting off any discussion of the impact of the various alternatives on the environment.

Secondly, and more importantly, I was left with the distinct impression that in holding such a meeting the BLM was merely complying with the wishes of the public expressed in the April, 1982 scoping meeting. All assurances to the contrary, it became very plain to me that the BLM's preferred alternative will be rationalized, defended, and accepted regardless of what the public sector deems important.

Where in Alternative 4 is a concern for maintaining old growth timber which would continue to provide a vital habitat for wildlife, a concern which should be an essential part of any responsible management plan? How can the BLM in good conscience support a plan which may very well eliminate entire species of wildlife and seriously endanger the existence of others such as the Roosevelt Elk, the Bald Eagle, and the Northern Spotted Owl?

I would like to go on record as supporting an alternative which is more noticeably favorable to wildlife and other natural resources through the withdrawal from harvest of old growth forest lands. While Alternative 10 appears to be most favorable to non-commodity resources, I can in good conscience support Alternative 9 which is obviously a more reasonable approach to land management by striking a better balance between the economy and other values. It is even possible to imagine that an alternative that would be somewhere between 7 and 9 could be worked out as a compromise.

I do not delude myself by thinking that my input will have a significant impact on any final decision regarding a management alternative for, as I stated earlier, I believe these decisions have already been made. However, I can at least feel comfortable knowing that I have let my opinion be known. Thank you for giving me that opportunity.

Sincerely,

Martha M. Teich
Martha M. Teich

Response to comments in Letter 14.

14-1 A review of the literature has not supplied any information on the relationship between timber harvest and ground water quality or recharge.

16 Robert B. Ward Jr.
1301 W. 20th
Florence, Oregon
97439

Mr. Dwight Patton
District Manager
Bureau of Land Management
P.O. Box 10226
Eugene, Oregon 97440

Dear Mr. Patton:

In reviewing the Eugene District Draft EIS, I am glad to see that the BLM is finally attempting to manage BLM lands as mandated by the terms of the O&C Act. I do have a number of concerns that are listed below;

1) Most of your allowable cut estimates are dependent on a considerable amount of intensive forest management. Nowhere in the EIS is the issue of funding addressed. I feel that the cost of intensive management needs to be established for each alternative. This also should be compared to projected funding levels so as to identify possible shortages.

How sensitive is your projected

16-1

allowable cut to funding levels?

16-2

2) Table C-2 indicates that 8,032 acres are being withdrawn from the timber base because you estimate these acres cannot be reforested within 5-years. It is my understanding that the Medford BLM has adopted a 7-year limit for tougher sites. Can this type of strategy be applied on the Eugene District?

16-3

3) Elk and Elk habitat have become a very big issue in your EIS. I feel your pessimistic projections as to suitable habitat and number of Elk are uncalled for and lacks adequate research to support your position.

The Forest Service, Siuslaw National Forest has dropped Elk as a primary indicator species because they have found that Elk herds tend to increase as intensive forest management increases. The F.S. has a road closure policy to mitigate people related conflicts.

Following the Tillamook burn, Elk herds began to increase and are still growing today.

Again I would like to re-affirm my support for your preferred alternative, but I do feel that an opportunity exists to increase the timber intensive land base.

Thank you
Robert B. Ward
1-21-83

Response to comments in Letter 16.

16-1 See common issue 1.

16-2 The BLM reforestation period of five years is based on the Congressional Report, Clear-cutting on Federal Lands (U.S. Congress, Senate 1973), prepared by the Senate Subcommittee on Public Lands, Interior and Insular Affairs Committee. This report recommended that clearcutting should not be used as a cutting method on Federal land when there is no assurance that the area can be adequately restocked within five years after harvest. BLM adopted this guideline and has classified these lands that could not be restocked within this period, based on application of any or all of the technologically feasible and currently available reforestation-enhancing practices (see Appendix C).

The Medford District's extended reforestation period is a trial harvest program that applies only to their low site lands that are currently withdrawn from the allowable cut base. The intent of this trial is to determine what regeneration period would be reasonable on specifically selected sites.

16-3 See the response to comment 11-5 and the elk discussion in common issue 2.

17
January 21, 1983
Box 459
Notif. O. 97461

District Manager
Bureau of Land Management
PO Box 10226
Eugene, Oregon 97440

Dear Mr. Patton

I appreciate the opportunity to comment on your draft environmental impact statement for timber management. I have several questions that I feel are important to have answered in the final impact statement.

17-1

In order to maintain an allowable cut of a specified volume with a shrinking land base it is apparent that increased funding will be necessary to accomplish this goal. How can you be assured that your funding needs will be fulfilled?

17-2

Commercial thinning requires more man hours per M Bd. Ft. produced than clear cut or partial cut logging. Has this fact been incorporated in your analysis of the economic impact of your decisions?

17-3

Your data suggests that with more intensive and extensive timber management that numbers of elk will decrease. What data do you use to base this assumption on? It would seem to me that using your assumptions the Tillamook burn area of our State should be devoid of elk.

17-4

There is no reason that the management of the Eugene BLM district lands cannot fulfill all the needs of the majority of the people of this area. Your analysis pits wild life interests versus timber management. You speak to the effects of mitigating measures to enhance timber management but no mention is made of mitigating measures to enhance wild life. I know there is common ground that maintains a solid timber base for the forest products industry and sufficient habitat diversification to maintain a stable wild life population.

Thank you for the opportunity to state my views.

Sincerely
Bill B. Rell

Charles W. Selden, III
2390 Spruce Street
Florence, Oregon 97439
January 21, 1983

Mr. Dwight Patton
District Manager
BUREAU OF LAND MANAGEMENT
P.O. Box 10226
Eugene, Oregon 97440

Dear Mr. Patton:

Reference the Eugene Timber Management Draft Environmental Impact Statement (DEIS) which was published in November, 1982.

18-1

Will adequate funds be generated from the revenues produced from the sale of timber to support the intensity of forest management included in your Preferred Alternative? If not, where will the additional funds come from? What assurance is there that these funds will be made available? If these additional funds were not made available, would the allowable cut be reduced? If so, how much?

18-2

What is the opportunity cost associated with preserving 3,987 acres of old growth timber under the Preferred Alternative as opposed to managing these acres for timber production? In making this analysis, the same intensity of management prescribed for the other lands being intensively managed should be applied to the withdrawn acres.

18-3

Are the withdrawn old growth lands and the 10,071 acres of additional commercial timberland withdrawn to protect other resources to be managed for wildlife and fisheries? If these lands were intensively managed for these other resources, what would be the effect of these mitigation efforts on the projected impacts on fishery and wildlife resources under the Preferred Alternative?

18-4

The DEIS dwells at considerable length on elk management. During the discussion at the January 12 public meeting in Eugene it was indicated that the lack of adequate thermal cover for elk will be a constraining factor on the number of elk. This statement was apparently made on the assumption that 90% of the intensive timber production acres would be commercially thinned. Has an analysis been made as to the acres which can be effectively commercially thinned within the District? Are such thinning cost effective? Other timber owners do not feel that this high-level of commercial thinning is practical, especially on rough coastal range lands typical of your ownership.

I do not feel that it is essential to preserve the number of acres of old growth which you have included in your Preferred Alternative. The BLM's scattered and checkerboard ownership cannot be expected to provide a "gene pool" for all of Western Oregon. The feasibility of maintaining these mature and deteriorating old growth stands into the future is highly questionable. The supposed environmental values of these old growth stands is based largely on opinions of a few persons and not scientific evidence. The long term benefits from managing as much

Response to comments in Letter 17.

17-1 See common issue 1.

17-2 The BLM recognizes that offering commercial thinning volume may require additional BLM administrative time and costs as compared to that needed for offering final harvest volume. The magnitude of this additional cost is dependent on the level of administrative control involved in preparing and administering the sale.

Generally, even in light of these increased costs, commercial thinning is a cost effective intensive management tool. However, as with any of the practices, if the personnel or funding is not available or a positive stumpage value cannot be realized, the amount of commercial thinning will be adjusted. If a significant adjustment occurs, a corresponding adjustment would be made in the allowable cut.

17-3 See common issue 2 for a discussion of the relationship between elk habitat and population. Table 3-15 in the draft EIS was incorrectly described in that the data represents changes in elk habitat, not populations.

17-4 A description of mitigating measures for wildlife has been added to the section on Forest Management Treatments and Design Elements, Chapter 1. See also common issue 2.

Mr. Dwight Patton
DEIS
Page Two

of your acreage as feasible for timber production and other resources under a multiple use concept would appear more beneficial to the nation. Given the high percentage of the population of this area which is dependent directly upon the timber industry for its livelihood, an increase in the acres intensively managed would be more appropriate than preserving deteriorating old growth stands.

Sincerely,

Charles W. Selden, III

Charles W. Selden, III

CWS/1c



SIERRA CLUB ... Oregon Chapter

2637 S.W. Water St. Portland, Oregon 97201

Please reply to: 755 NE Circle Blvd. #17
Corvallis, OR 97330
503-758-9243

January 20, 1983

Mr. Dwight Patton
District Manager
Bureau of Land Management, Eugene District
P.O. Box 10226
Eugene, Oregon 97401

Dear Mr. Patton:

The Oregon Chapter of the Sierra Club considers the preferred alternative described in the Eugene Timber Management Plan Draft Environmental Impact Statement a gross misinterpretation of the O&C Act of 1937. This draft EIS is presented in a confusing and deceptive format. It is often contradictory and most of the alternatives including the proposed action show a total disregard of multiple use management principles mandating instead timber production as an almost exclusive use for district lands.

The O&C Act requires management for other interests besides timber supply and the Eugene Timber Management Plan must comply with the requirements of the Sikes Act, the Clean Water Act, and the Endangered Species Act. Moreover some of the lands affected by this Draft EIS and the different alternatives are public domain lands. These public domain lands should be managed under the guidelines of the Federal Land Management Policy Act. Furthermore the proposed decision in this Draft EIS (because of the adverse impacts upon wildlife populations) violates the Oregon Coast Zone Management Plan which was mandated by the Coastal Zone Management Act of 1972.

We consider the proposed action to be discordant with Goal 5 of the Oregon Land Conservation and Development Commission's Statewide Planning Goals in that our wildlife resource is a natural resource and should be protected. The preferred alternative also violates provisions and rules associated with the Oregon Forest Practices Act concerning wildlife populations and the effects of timber harvest upon wildlife, including species listed as threatened on the Oregon state list.

The Draft EIS for the Eugene District appears to deliberately underscore the need for old growth areas and Areas of Critical Environmental Concern. These unusual areas are essential for both flora and fauna dependent upon the diverse habitats included in the A.C.E.C. proposals including old growth timber stands of sufficient areal extent. Throughout the Draft EIS these items are poorly described or omitted.

... To explore, enjoy and preserve the nation's forests, waters, wildlife, and wilderness ...

page 3

21-12 1) Basing the projected economic effects of timber harvesting on the local economy on the years 1978 or 1979 which were boom years in the timber business is incorrect. We would like the projected economic effects to be based on data from at least the past ten years.

m) It is clearly evident that your survey respondents would like to see more wildlife habitat and multiple use areas. Is it the policy of the BLM to ignore public opinion?

21-13 n) What 1st or 2nd order stream classification are you using and what is a larger river or larger stream? Are they the same, more volume, length?

21-14 o) Why does the Roosevelt elk percentages given in table 3-11 disagree with those in table 3-15? Also, a similar problem is noted in comparing spotted owl percentages.

21-15 p) What is "Percent Management Level"? (Table 3-12)

21-16 q) Which published reports document the statement that chemicals applied to any given clearcut would have no measureable effect in the aquatic environment? We would like to see what constitutes a measureable effect? (page 61)

21-17 r) Why isn't the loss of snag dependent wildlife considered a significant adverse impact? We would like to see the BLM snag policy stated in the Final Eugene EIS.

21-18 s) What published report demonstrates that chemicals once sprayed will become unavailable on contact to individuals? Please address this in you final EIS.

21-19 t) What percent of the Eugene land area is not O&C lands? How will public domain lands be managed differently?

21-20 The preferred alternative predicts the ultimate destruction of habitat for bald eagles on the Eugene District. This is contrary to the national policies and laws of the United States. How can the BLM justify this action?

We regard the proposed alternative to be unacceptable on the grounds it destroys future management options should it be shown that intricate relationships between wildlife and old growth timber are essential for productivity on public forest lands. The proposed action violates numerous laws already cited and is basically bad forest management.

Alternative 10 without the use of herbicides is a more acceptable alternative

page 2

For example:

21-3 a) There is no clear statement why the BLM switched from Alternative #7 to #4. Please explain this action in the final EIS.

21-4 b) Why are there 3,040 acres listed for herbicide spraying, when the title of Alternative 10 clearly states "Maximum Ecosystem"? (Table 1-1)

21-5 c) What action is "No Action" in Alternative #6? How much has been cut?

21-6 d) Sediment Yield: What does ton x 100/decade mean? We want to know if it is tons per acre, tons per square mile, or tons per EIS SYM. Please clarify this (Table 1-3).

e) Under what premises does the BLM on the Eugene District recommend clearcutting of old growth when there are 56,000 acres of harvestable timber less than 106 years old? (Table 2-4)

21-7 f) What 36% of what survival cover on what land? (page 20)

21-8 g) What "all land" areas are these additional 76 pairs of spotted owls associated with? Are they adjacent to old growth stands in the Eugene District? We would like these areas represented on maps. (page 30) Does the Forest Service plan on phasing out spotted owl habitat on their lands?

21-9 h) What designates an irregular configuration within an area and why does this preclude the sense of isolation of the visitor? We find the Windy Peak and many other areas to be unique, beautiful areas and this criterion alone qualifies them for an Area of Critical Environmental Concern designation (page 31).

21-10 i) What fundamental principle excluded 14 diverse and important areas from the ACCE status? In the final EIS we request the BLM to include a detailed description of each of the nominated ACCE areas and a detailed discussion of why each area did or did not qualify for an ACCE designation (page 35).

21-11 j) We request that the list of the district's wildlife species be included in the Final EIS document along with their habitat areas and current status according to the Federal and State endangered species lists.

k) 12.1% of 20% provides 16.1% while employing 23.5% of what economic condition? (page 33)

page 4

and the Oregon Charter of the Sierra Club urges the District Manager to reconsider the proposed action.

Thank you for allowing us the opportunity to comment.

Sincerely,

Kelly O'Brian Smith
BLM Issue Coordinator, Oregon Chapter
Sierra Club

cc: Sierra Club Legal Defense Fund
Elizabeth Frenkel, Regional Vice President, Sierra Club
Ron Eber, State Chairman, Oregon Chapter, Sierra Club

S.Walters

Response to comments in Letter 21.

21-1 See response to comment 3-1.

21-2 A consistency determination describing the consistency of the new preferred alternative with the Oregon Coastal Zone Management Plan has been submitted to the Oregon Department of Land Conservation and Development.

21-3 Alternative 4 was developed and designated as the preferred alternative in the DEIS in response to management criteria for the O&C lands, issued by BLM in July 1982. The new preferred alternative (Alternative 5) responds to the O&C Forest Resources Policy (see Appendix B). See Purpose of and Need for Action, Chapter 1.

21-4 Through the EIS scoping process, Alternative 10 was designed to address a land use allocation issue. Public input to scoping requested that the herbicide issue be addressed separately from land use allocation issues. Alternative 8 (No Herbicides) uses the same land use allocations as the preferred alternative.

21-5 The "no action" alternative (Alternative 6) represents a continuation of the present allowable cut plan. Table 2-4 in Chapter 2 describes the age class structure of Eugene District lands as of the 1976 inventory.

21-6 The water resources data in Table 1-3 is a summary of information contained in table 3-6, Estimated Increased Sediment from Timber Management Activities on BLM-Administered Land, End of First Decade (Tons/Decade), Chapter 3.

21-7 Thirty-six percent of BLM lands within the Siuslaw drainage (from Alma to Astoria) is in "survival cover" forest 120 years or older.

21-8 See response to comment 11-2. The east-west corridor in the new preferred alternative recognizes proposed allocations for northern spotted owl habitat in adjacent BLM Districts and existing habitat in adjacent Forest Service jurisdictions. Allocations for the other alternatives also reflect consideration of the known or estimated condition of adjacent wildlife habitat, although it is not within the scope of the EIS to predict the harvest schedules of private owners or other land management agencies.

21-9 The irregular configuration was a reference to the checkerboard land ownership pattern in the Windy Peak area. This area is presently roaded and does not qualify for wilderness designation, although it was considered as a potential Area of Critical Environmental Concern.

21-10 See response to comment 9-2.

21-11 See response to comment 9-1.

21-12 As noted in Tables 2-15 through 2-17 of the DEIS, the base period for impact analysis is FY 1978-1981. Increasing the number of years in the base period would only slightly change the estimated effect on the local economy. For example, the average annual removal of the 9 1/4 years shown in Table 2-15 is 189.2 MMBF, compared to the 187.3 estimated for the FY 1978-81 base period.

21-13 "Stream order" is a hydrological system of ordering tributaries within a given watershed basin. Each nonbranching headwater stream channel segment is a first order stream. First order streams may be perennial or intermittent, but must have a definable channel. Streams which receive only first order segments are classified as second order streams, and so on.

21-14 Changes made in Tables 3-14 and 3-15 during development of the DEIS were inadvertently omitted in Table 3-11. Tables 3-11 and 3-14 are consistent in the final EIS.

21-15 The "percent management level" is a function of the amount of forest area containing snags and the number of snags present. For example, in Alternative 10, 96 percent of the forested acres would have 89 percent of the maximum number of snags needed to provide maximum populations (.96 x .89 = .85). (See Thomas 1979, pp. 60-77.)

21-16 Numerous references to effects on aquatic vegetation are found in Environmental Effects of Vegetation Management Practices on DNR Forest Lands, Newton and Dost, 1981. Additional information is found in Environmental Fates and Impacts of Major Forest Use Pesticides, Ghassemi, U.S. EPA, 1981.

21-17 The loss of snag-dependent wildlife is considered a significant adverse impact. See the section on Impacts on Animals in Chapter 3.

21-18 This subject has been extensively covered in Environmental Effects of Vegetation Management Practices on DNR Forest Lands, Newton and Dost, 1981. A more complete analysis of exposure can be found in Impacts of Herbicides on Human Health--Worst Case Analysis, BLM, 1983.

21-19 Three percent of Eugene District lands--about 9,300 acres--are public domain. See response to comment 3-1.

21-20 BLM is required to comply with the Endangered Species Act, the Migratory Bird Treaty Act and the Bald Eagle Recovery Act. BLM's preferred alternative protects known active eagle nest sites. As coordinated plans for eagle management develop among involved federal land management agencies, BLM will participate as required. These plans are yet to be finalized. See additional information in Impacts on Animals, Threatened and Endangered Animals, Chapter 3.



United States Department of the Interior

NATIONAL PARK SERVICE

Pacific Northwest Region
Westin Building, Room 1920
2001 Sixth Avenue
Seattle, Washington 98121

IN REPLY REFER TO:

1202-03(PNR-RE)

January 18, 1983

Memorandum

To: District Manager, Eugene District Office, Bureau of Land Management, Eugene, Oregon

From: Regional Director, Pacific Northwest Region

Subject: Review of Eugene Sustained Yield Units Ten-Year Timber Management Plan Draft Environmental Impact Statement, Oregon

We have reviewed the subject environmental statement and have the following comments to offer:

Impacts to National Park Service Units

No lands administered by the National Park Service would be impacted by the proposed action.

Recreational and Cultural Resources

We feel that the document adequately addresses the impacts that are likely to occur to recreational and cultural resources as a result of the proposed action.

Thank you for the opportunity to review this document.

Daniel J. Tobin
Daniel J. Tobin, R.

22

Oregon Cooperative
Wildlife Research Unit
Department of
Fisheries and Wildlife



Corvallis, Oregon
97331-3803

COOPERATING AGENCIES:
Oregon Department of Fish and Wildlife
Oregon State University
U. S. Fish and Wildlife Service
(ITS 425-4531) Wildlife Management Institute

23

January 21, 1983

Mr. Ought Patton
District Manager
Bureau of Land Management
P.O. Box 10226
Eugene, OR 97440

I am offering these comments on the Draft Eugene Timber Management, EIS. My comments are limited to the effect of the proposed management on the Northern Spotted Owl. Other wildlife sharing the same habitat requirements as the spotted owl will be similarly affected.

Since 1972, the Oregon Cooperative Wildlife Research Unit has been engaged in research on the spotted owl. The research results have been supplied to the Oregon-Washington Interagency Wildlife Committee which formulated a management plan for spotted owls in Oregon. BLM participated fully in developing that plan and funded portions of the spotted owl research effort. In 1978, the BLM and the U.S. Forest Service accepted the responsibility to provide habitat for 390 of the recommended 400 pairs of spotted owls.

The clear goal of the Oregon Spotted Owl Management Plan was to preclude the necessity of listing the Northern Spotted Owl as federally threatened or endangered. The economic implications of habitat protection for the spotted owl were carefully considered; the resultant plan represented minimum population levels required to ensure viability. The plan's twin goals to ensure viable population size and distribution throughout the species range are key elements in the USOA Policy on Fish and Wildlife and the USOI's evolving National Fish and Wildlife Policy.

The preferred alternative (4) proposes to protect habitat for only 1 pair of spotted owls. Clearly, this does not meet BLM's obligation for spotted owl habitat protection. Similar levels of non-protection of spotted owl habitat are suggested in the Final EIS, South-Coast Curry Timber Management Plan. The effect of BLM proposed actions will be to eliminate viable populations of spotted owls on BLM lands and create 3 islands of remaining spotted owl habitat in Oregon: Cascades, Siuslaw National Forest, and Siskiyou/Rogue River National Forest. With no direct contact corridors to the south or east, the Siuslaw island population will not be viable; spotted owls will thus have been eliminated in viable numbers north of the Siskiyou's in the Coast Range. In my opinion, this is a significant portion of the animals' range and requires consideration for federal threatened status.

23-1

Dwight Patton, BLM Eugene

- 2 -

1-21-83

Other wildlife having specific habitat needs not met by intensive timber management will face similar consequences.

The preferred alternative represents total abdication of responsibilities for wildlife habitat management; I urge reconsideration and return to at least the levels of wildlife habitat management accommodated in the alternative 7, the original proposed action.

Sincerely,

E. Charles Meslow
E. Charles Meslow
Leader, Oregon Cooperative
Wildlife Research Unit

ECM:ah

Response to comments in Letter 23.

23-1 BLM's agreement was to consider the protection of 90 pairs of owls throughout western Oregon in accordance with the recommendations of the Interagency Spotted Owl Management Plan. Interim protection of sufficient habitat to meet these needs was provided during the planning process and alternatives were developed ranging from one which would withdraw all old-growth to one which made no provisions for owl habitat. The preferred alternative for the Eugene District would provide habitat for 7-13 pairs of owls over the decade (depending on habitat size criteria applied), aligned in a pattern that would preserve some opportunities for genetic interchange among breeding pairs both within the boundaries of the District's administration and between the District and administrations of adjacent Forest Service and BLM Districts. The cumulative impacts on the northern spotted owl of the preferred alternatives and decisions for all five western Oregon districts are discussed in Chapter 3.

Willamette Industries, Inc.

Forest Products Division
Griggs Division

January 21, 1983

Bureau of Land Management
District Office
P.O. Box 10226
Eugene, Oregon 97440

Attn: Dwight Patton

RE: Response to Timber Management Environmental Impact Statement.

This environmental impact statement of your Timber Management Plan represents a lot of man hours and hard work. I can appreciate the effort that was given for its completion. There are however a few questions and comments I wish to raise.

A good starting place would be my position in regards to your position as custodians of the public's trust. It should be your priority, as timber managers, to manage these public lands to maximize yield using all the modern techniques of forest management. If these lands were in private ownership the individual owners would be doing exactly that. In your situation, where you are managing these lands for others, you should: 1) Follow the directives that bind you 2) Meet the needs and wants of the majority 3) Recognize the potential these lands have and manage them to extract the maximum they will yield. To conclude I would prefer alternative #2. These lands are some of the highest Douglas-fir producing lands in the world and should be managed for timber.

I do have a series of questions in regards to your various treatments.

Timber:

- 24-1 Why does alternative #4 have 22,864 fewer acres than alternative #6 yet show a greater annual timber production of 11MM feet? The above presumes you are going to increase your efficiency and practices over current direction yet how are you doing it and how about the funding for this increase? You need to expand on this.
- 24-2 Your withdrawn categories amount to 21,555 acres of the Eugene SYU. Where are these areas? Why don't you consider 7, 8, or 10 years instead of 5 for a regeneration time period?
- 24-3 What about the non-stocked acres? What are the techniques and timetable for their stocking? What ACE potential are tied to these acres?

24



P.O. Box 487
Lebanon, Oregon 97355
503/256-3134

There has to be more consideration given when trying to manage for everything on every acre. One example is the requirement to leave snags for birds but forgetting the hazard it poses to the logger or the potential it represents for fires.

Wildfire:

In many respects this plan is as much or more a wildlife plan than a timber plan. As stated before, it is hard to maximize this land for more than one objective. This land is recognized world over as the best for growing Douglas-fir, not elk, deer, or the spotted owl.

- 24-5 I object to leaving vast areas of old growth for elk protection. You have given no proof that this is necessary. If your premise is correct how do your biologist explain the elk herds on the Tillamook forest and in the Wendling area of the Mohawk?

Your references to wildlife optimize either game or non-game species when necessary or minimal is appropriate. Optimize the timber producing potential instead.

Spotted owl studies need to commence in other than old growth timber habitats. I remember when the Pileated wood pecker was to die out because the old growth was being decreased. Now you find him all over in all stages of growth. Is it the only species that adapts to changes? Wildlife studies can be concurrent with timber harvest and management.

Economic Conditions:

The socio-economic impacts in this plan appear to be well researched and empirically descriptive of the districts influence. However, the full impact and trade-off values need full and total recognition when the wildlife aspects of the Timber Management Plan are weighted in the decision process.

The general public is more concerned about jobs, inflation, schools, and homes, than forestland recreation potential. I believe the majority of the people would like to see the land maximized for timber because, this affects their livelihood.

My concluded statement may wax philosophical how-be-it true; the people that are impacted by this plan would rather have a stable community than to hear the hoot of an owl. It has always been this way therefore priorities must be listed and man should be on top.

Sincerely,

Robert L. Magathan
Robert L. Magathan

Response to comments in Letter 24.

- 24-1 Alternative 6 (No Action) is a continuation of the 1972-1981 allowable cut plan. Alternative 4 (as well as the new preferred alternative) recognizes more intensive timber production capabilities, as well as resource uses and values other than timber production; thus the lesser acreage devoted to timber management.

Timber management practices are to be intensified to approach full utilization of the site potential. This includes an increase in thinning activities in stands 40-70 years of age that produce merchantable volume, thus capturing volume otherwise lost prior to final harvest. Alternative 6 would produce 4.4 MMBF/year attributable to this practice, while Alternative 4 would produce 10.5 MMBF/year, due to an emphasis on increased intensity of this thinning.

- 24-2 See common issue 1.

- 24-3 Those areas identified as withdrawn under the Timber Production Capability Classification (TPCC) are shown on the folded maps in the back cover pocket of this document. BLM adopted the five-year time lag period from those limitations on timber harvesting and related activities identified in the Congressional Report, Clear-cutting on Federal Lands, generally referred to as the Church Report (U.S. Congress, Senate 1973).

- 24-4 The non-stocked acres identified in Table C-1 represent areas that were classified as having less than 30 trees per acre on the site at the time of the 1978 inventory. The sites consisted of backlog areas, recent clearcuts awaiting site preparation or recently sold tracts that were awaiting timely removal.

Since 1978 these areas have been treated; however each year new acres are classified understocked as they are sold. The District's current goals are to keep understocked acres less than 1 1/2 times the annual clearcut area. The non-stocked acres are all commercial forest land. The lag between the sale date and completion of planting is a factor in computation of the allowable cut.

- 24-5 See elk discussion in common issue 2.



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Division of Ecological Services
Portland Field Office
727 N. E. 24th Avenue
Portland, Oregon 97232

Reference: ES

January 21, 1983

MEMORANDUM

To : Eugene District Manager, Bureau of Land Management
Eugene, Oregon

From : Field Supervisor, Division of Ecological Services
Portland, Oregon

Subject: Review of the Eugene Timber Management Draft Environmental Impact Statement, Lane County, Oregon

We have reviewed the draft environmental impact statement (EIS) on the Eugene Timber Management proposal and find that the document is generally very well prepared. Essential elements of the plan and their probable impacts are presented in a straightforward and objective manner. However, we have a number of concerns which are discussed in the following comments and should be addressed in your preparation of the final EIS.

General Comments

25-1

Based on the information submitted, it appears that the proposed management plan would have a significant adverse impact on area fish and wildlife resources. The document does not specifically discuss impacts of the preferred alternative on anadromous and resident fish. Such a discussion should be included in the final EIS. In addition, the loss of wildlife through habitat reduction should be discussed in more detail in the final document. It should also be clarified whether wetland areas within the management unit will be affected.

In the original proposed alternative (alternative number 7) old growth areas were recognized as being essential in the support of wildlife resources. However, the currently preferred alternative (number 4) has deviated from this concept and may not provide adequate protection and management of the area's fish and wildlife resources. This is a direct result of a decrease in habitat diversity and in particular a reduction of old-growth areas. From a fish and wildlife resource standpoint, alternative number 9 would be preferred.

It is our belief that proper guidelines and selected mitigative measures should be fully coordinated with appropriate state and federal resource agencies and incorporated in any future management or operational plans that you subsequently adopt. The final document should also consider all practicable means and measures that could best satisfy identified needs while at the same time protecting, preserving, and enhancing the quality of the environment, restoring environmental quality previously lost, and minimizing and mitigating unavoidable adverse effects. We are especially concerned about maintaining a reasonable riparian buffer strip in association with each stream corridor. Also, bank protection is important in helping to reduce potential sedimentation and temperature increases.

Specific Comments:

25-2

Page 10, table 1-3. The "summary of impacts" table does not reflect any impacts on fish or their associated habitat. This category should be included. Also indicated is a 10-25 percent increase in fish production which should be explained in the narrative section of the final document.

25-3

Page 25. The wetland and aquatic section should be detailed and expanded. There is no indication of what would be altered.

25-4

Page 29. Fishery data are incomplete and should be expanded to include what species and habitats would be impacted.

25-5

Page 30, table 2-8. The "cold water fish habitat and populations" table states that fish habitat for selected species (chinook, coho, steelhead and trout) is either stable or declining. This is inconsistent with the 10-25 percent increase presented in table 1-3 and should be explained.

25-6

Page 50. Riparian habitats are very important as stated on page 28. However, on page 50 it states that the preferred alternative would not require vegetative buffers along first and second order streams except when necessary to minimize water quality impacts. This would allow the elimination of an important water quality protective measure as well as a reduction in an important habitat type. Justification for the loss of this habitat and factors which would determine when its preservation is necessary to minimize water quality impacts should be fully discussed in the final EIS.

Page 51. Discussion of impacts on riparian habitats and streams by erosion, landslides, nutrient depletion, and road construction should be expanded and presented in more detail in the final document. Mitigative measures should be implemented to prevent any long-term adverse environmental impacts.

25-7

Page 51. There is no discussion of impacts to wetland areas. This should be included in the final document.

25-8

Page 57, table 3-11. The discussion on short- and long-term impacts to selected species or their habitats indicates that cavity dwellers are already at very low levels. The effects of the proposed action on these already low population levels should be fully discussed in this section.

25-9

Page 58. There is no indication of what portion of the existing riparian habitat would be altered. This should be addressed in the final EIS.

Page 60. A number of factors which can adversely affect fish are presented; however, a comparison of the amount of impact the various alternatives would have should be included and should also be utilized in selecting a preferred alternative.

25-10

Page 60. The harvesting of timber has an adverse impact on fish habitat by removing the riparian zone, changing water yields, and increasing sedimentation. Therefore, riparian areas which may be lost should be quantified in the final document to help assess the magnitude of impact of the various alternatives.

25-11

Page 63. Since the bald eagle will be impacted by the preferred alternative, we suggest that you make the following contact to assist in complying with the Endangered Species Act.

Mr. James Bottonoff
Endangered Species Team Leader
U.S. Fish and Wildlife Service
2625 Parkmont Lane
Olympia, Washington 98502
Phone: (206) 753-9444

25-12

Page 63 and 64. This section acknowledges that northern spotted owl will be adversely affected and systematically reduced from 42 pairs to 0-10 pairs. It would appear that the cumulative impact of the proposed action and similar management of other forest lands could lead to the eventual listing of the northern spotted owl under the Endangered Species Act. Accordingly, the final EIS should explain why the proposed action would not cause an unacceptable environmental impact.

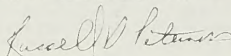
Summary

We are concerned about the effects this plan, if implemented, will have upon fish and wildlife resources of the Eugene District. The above concerns center on the fact that the proposed decision provides for no mid-age and old-growth components of habitat diversity for wildlife. Maintenance of these components through "seral stage distribution" extends only through the first decade. Absence of these mid- and old-growth

components has drastic implications. We recognize that the seral stage diversity provision does benefit species dependent upon old-growth habitat. However, we believe there is a real question as to whether the acreage designated to provide seral stage diversity is, in fact, great enough to meet its objective; i.e., maintaining minimal amounts of the older stages until more is learned of their relation to long-term timber production.

We agree that designating riparian zones and streamside buffer strips is beneficial to anadromous fish. We also recognize that once the road network necessary for intensive timber management is in place, sedimentation from that source will decline. At the same time, since anadromous fish are such an important economic, as well as recreational resource we recommend that consideration be given to measures which will positively enhance, not merely maintain a trend toward improvement. These measures include expansion of riparian and streamside buffer strips for purposes of habitat and water quality maintenance.

We again compliment you on the quality of the Draft EIS. However, we urge reconsideration of those aspects of the plan which would adversely affect fish and wildlife resources. Please feel free to contact us if you have any questions concerning our comments. We would also appreciate receiving a copy of the final statement when it becomes available.



Russell O. Peterson

P.O. Box 849
Eugene, Oregon 97440
503 687-4676

Timberlands Division

26



Dwight Patton
Eugene District Manager
Bureau of Land Management
P. O. Box 10226
Eugene, Oregon 97440

January 21, 1983

Dear Mr. Patton:

I am offering the following comments on the Eugene Bureau of Land Management District Timber Management DRAFT Environmental Impact Statement on behalf of Champion International Corporation. As you know, within the area affected by the Eugene District, Champion operates a veneer mill at Mapleton, plywood and hardboard mills at Lebanon, and a plywood mill at Roseburg. We also own and manage 186,000 acres of timberlands in this area of Oregon. We have a history of purchasing Eugene BLM District timber; therefore, we are very interested in the future timber management plans for this District.

While we feel that your preferred alternative number 4 is an adequate compromise between environmental protection and intensive timber management, we favor alternative number 2. The rationale for our supporting alternative number 2 rather than number 4 is as follows:

1. O&C Lands are to have a primary emphasis on providing "an optimum and nondeclining yield of wood products so as to enhance the economic stability of local communities and industries while providing for other forest values as required by law". Alternative 2 suits this criteria well and does not result in the temporary falldown in sale offerings that alternative 1 demonstrates after the first decade.

2. Alternative 2 does, of course, provide for legally required environmental protection. We do not agree with the statement in your OEIS, page 60, which mentions that the Oregon Forest Practices Act streamside protection buffers are inadequate. Furthermore, we strongly challenge the validity of the population decreases predicted for Roosevelt elk in all of the alternatives. The large decreases in elk populations seems to run counter to all historical evidence in western Oregon. One needs to only review the Tillamook Burn evidence or the large elk population increases in the Coos Bay area, that followed intensive harvesting of industry lands, to understand that Roosevelt

Response to comments in Letter 25.

- 25-1 Table 3-13 identifies impacts on coldwater fish, which includes anadromous fish. These population changes will respond to changes in habitat. Additional information is provided relative to loss of wildlife. A discussion of impacts to wetland vegetation has been added.
- 25-2 The change in fish populations is expected to be proportional to the change in habitat so that the percentage changes in population also reflect the expected changes in the overall habitat quality and quantity.
- 25-3 A discussion of wetland and riparian vegetation has been added to Chapter 2.
- 25-4 The information in the EIS is a summary of information contained in the District Unit Resources Analysis (URA) and Management Framework Plan (MFP) which are too long for inclusion in the EIS. If further information on specific habitat or species is desired, the URA and MFP are available in the District Office.
- 25-5 Table 2-8 indicates the current situation by species. Table 1-3 summarizes the expected changes resulting from implementation of the specific alternatives. The expected impacts of the no action alternative would be a continuation of the current situation summarized in Table 2-8.
- 25-6 The third order and larger streams are usually perennial with at least seasonal fish use. The first and second order streams may have at least some seasonal fish use; however, the incidence of use in the Eugene District is very small because of the steep gradients. The first and second order streams are most important as a source of water and as the greatest source of erosion and mass events. A wide variety of conditions are found in the first and second order streams which call for protection appropriate to the individual sites. As a result, the District has elected to provide uniform protection for the larger fish-containing streams, but to retain flexibility in management of first and second order streams. Staff specialists visit each proposed site before management actions occur. This input is used by the area managers in developing management plans. Managers have the flexibility to provide the needed management protection, up to full protection if necessary. A discussion of these measures has been added to Impacts on Water Resources, Water Quality, Chapter 3.
- 25-7 A discussion of impacts to wetlands has been added to Chapter 3.
- 25-8 Effects of the proposed action are discussed in Chapter 3, Impacts to Animals, Terrestrial Vertebrates, Timber Harvest.
- 25-9 A comparison of the riparian value index figures in Table 3-11 give a close approximation of the proportion of riparian habitat altered.
- 25-10 See response to comment 25-9.
- 25-11 Compliance coordination is underway. See response to comment 21-20.
- 25-12 See response to comment 23-1.

Dwight Patton
January 21, 1983
Page 2

elk behave in western Oregon like ungulates behave in most situations in North America, i.e. they increase with favorable habitat development. Road closures to reduce elk hunting pressure appears to be a logical step to maintaining large populations. Alternative 2 would result in 26,300 acres of old growth in 1988 versus 27,400 acres of old growth for alternative 4. If a large inventory of old growth becomes a legal requirement in the future to maintain habitat for endangered species, it appears that this could still be accomplished.

3. From a business standpoint, we naturally favor alternative 2 since it offers an opportunity to moderate local stumpage prices and significantly increase timber supply over the next decade. The increases in employment, total earnings, and county revenues that are produced with alternative 2 are significant as pointed out in Tables 1-3, 3-18, 3-19, and 3-20.

We would like to offer the following comments (and pose a few questions) which may assist you in preparing the final EIS:

1. We support your trend of planning for fewer commercial thinnings. Alternative 6, your present plan, called for 46,800 acres of commercial thinning to be done in the next decade. Alternatives 1 through 5 and 7 through 9 all call for between 12,000 to 14,000 acres of thinning within the next decade. Our analyses have shown that only under certain situations does commercial thinning appear to be cost-effective. Your site indices and rotation ages are not stated, so those factors cannot be assessed. But, since only cable thinning would likely be done on your district and road building costs would be high relative to timber volumes and values, the net present value of commercial thinning may not exceed the regime of precommercial thinning only. A side benefit to less commercial thinning, according to your wildlife biologists, would be better thermal cover for big game species and fewer roads which can increase hunting pressure. A further benefit from less commercial thinning, as you are probably aware, is reduced administrative costs per Mbf harvested. We feel a more thorough discussion of this practice may be warranted in the final EIS. We recommend including a view of rotation ages over time and a breakdown of acres by site class.

2. We are concerned about your funding levels. We understand your funding was switched to a congressional appropriation type of system similar to the U. S. Forest Service in 1982. Is this a temporary measure? In terms of becoming more efficient, some of the comments made previously on commercial thinning apply. In addition, we feel your fertilization plans are a little optimistic. Our analyses and a

26-1

26-2

26-3

26-4

26-5

Dwight Patton
January 21, 1983
Page 3

current evaluation by Economics Professor Bruce Bare, University of Washington, College of Forest Resources, indicate that only one to two standard nitrogen fertilizations can be economically done just prior to final harvest. Your plan of starting fertilization immediately after time of precommercial thinning and continuing on a ten-year cycle until rotation age may be a little optimistic. Certainly, tax dollars have been spent on less cost-effective expenditures than this. We are merely stating that we do not feel that intensive of a level of fertilization is warranted. We do however support the use of fertilization and we have fertilized thousands of acres in western Oregon over the past five years. We do not feel that vegetation management practices can be compromised. We support your practice of intensive presurveying of units prior to considering them for vegetation control. We also support your efforts to rely on aerially applied herbicides as your primary vegetation control measure.

26-6

3. Perhaps the most surprising predictions in the DEIS are those regarding the declines in Roosevelt elk populations. As previously mentioned, the conclusions reached do not appear to us to be logical or to follow historic evidence. We realize a distinction is made between "thermal" and "survival" cover; and, apparently only old growth stands can offer "survival" cover for elk. We question the accuracy of this conclusion. In addition, how often do climatic conditions in western Oregon warrant "survival" cover? We will remain very skeptical of the conclusions regarding elk population trends until evidence is presented to indicate otherwise.

In conclusion, we favor alternative 2 for the reasons previously listed. However, your chosen alternative, number 4, is certainly an improvement, in our view, over the present plan. Please give our alternative preference and our comments fair consideration in your final EIS and Timber Management Plan.

Sincerely,

Jeff Madsen
Jeff Madsen, Silviculturist
West Coast Operation

JLM:dad

cc: W. A. Hite
Planning Manager
Champion International Corp.
P. O. Box 849
Eugene, OR 97440

W. S. Phillips
General Manager, Southern Oregon Region
Champion International Corp.
P. O. Box 849
Eugene, OR 97440

W. O. Larson
Vice President & General Manager
Champion International Corp.
P. O. Box 849
Eugene, OR 97440

TO: Dwight Patton
District Mgr., Eugene District
Bureau of Land Mgmt.
U.S. Dept. of Interior

DATE: JAN 24, 1983

27

SUBJECT: COMMENT

FROM: Jeff Madsen
1935 Tigertail Rd.
Eugene, OR 97405

ON EUGENE BLM DISTRICT
TIMBER MGMT PLAN AND DEIS

While I consider your preferred alternative #4 to be a vast improvement over the present District Plan (#6) I personally favor alternative #2 as a future timber management strategy for the Eugene District. Alternative #2 appears to me to be an appropriate plan considering the criteria to be used by your District in choosing a plan (Appendix B.) I favor alt #2 over alt #1 merely because I do not wish to see a falldown in harvest levels in the future; although, the temporary "departure" sales in alt #1 I'm sure are attractive to many companies that operate within your area. Both alt #1 and #2 would increase sale offerings significantly and also serve to moderate stumpage prices. Keeping West Coast stumpage as low as possible is, I feel, a primary requisite to maintaining or increasing our region's market share for wood products. As you know, low stumpage prices in the U.S. - South

Response to comments in Letter 26.

26-1 The purpose of buffers as required in the Forest Practices Act is to protect water quality. When adequate hardwood buffers are retained, and where the size of cut-over area is not too large, the buffers do help protect water quality, particularly for temperature and sediments.

26-2 See response to comment 11-5 and Roosevelt elk discussion in common issue 2.

26-3 Most of the commercial thinning proposed for the next decade would be in the older (60-70) age class stands that will not be entered for final harvest until at least 20 years from date of treatment. The objective of this thinning is to recover merchantable volume from wild stands that would be lost before final harvest could occur. These thinnings would be scheduled only if they would yield positive returns.

Thinnings during the succeeding decades would be concentrated in managed stands that will have had density control occurring during early stand development. This projection is based on model assumptions that use an average site class for the Eugene District.

26-4 See response to common issue 1.

26-5 Fertilization is proposed for Douglas-fir stands that will be thinned during the 1984-1993 decade and those stands thinned during the past decade. These stands would be fertilized for the first time; no stands would be fertilized a second time during the decade.

Fertilization would occur only following the second and subsequent thinnings prior to final harvest, and no more often than ten-year intervals. The planned 40-year minimum harvest age would limit the potential number of thinnings in a given stand.

This treatment regime will be implemented only on those sites when it is determined to be economically feasible. This determination will be based on soil tests and treatment costs; application intensities would be adjusted to reflect the current site and economic conditions.

26-6 See elk discussion in common issue 2.

have hurt the West Coast for years. I feel that alt #2 should not cause unacceptable environmental damage. Alt #2 retains a great deal of the District's old growth up until at least 1988. If some local species that may require old growth habitat are added to the Federal Endangered Species list it appears that the District would still be able to protect them (at least if the classification were to occur before 1988).

27-1

I personally do not agree with the DEIS assessment on how Roosevelt elk populations will be affected by the various alternatives. The declining population levels in nearly all alternatives seem to run counter to logic and historical data. I do agree with the direction of fewer commercial thinnings. Unless you will be following relatively long rotation ages in the future (60 yrs.+) I would expect that commercial thinning would not be cost-effective versus simply a wide PCT and no - comm. thinning.

Please give my chosen alternative fair consideration before making your final selection.

Sincerely,

Jeffrey L. Madsen

Response to comments in Letter 27.

27-i See response to comment 11-5 and elk discussion in common issue 2.



Sierra Club
Many Rivers Group
P.O. Box 3643
Eugene, Oregon 97403

28

Members in Coos, Douglas and Lane County

January 22, 1983

Mr. Dwight Patton
Bureau of Land Management
1255 Pearl Street
Eugene, Oregon 97401

Dear Mr. Patton:

Our local group will not be providing input regarding the draft environmental impact statement. It has become obvious that this process is being manipulated by Reagan appointees in Washington DC and our effort would be futile.

Our group, which has participated in this process from the beginning, will no longer participate until you show how our letter and Congressman Jim Weaver's (Chairman of the Forestry Subcommittee) letter, both provided last spring, have been incorporated in the planning process. We want specific documentation.

It is rather unfortunate that local BLM officials have been so unresponsive to comments from the environmental community.

Sincerely,
Jack Desmond
Jack Desmond
Chairman

Not blind opposition to progress, but opposition to blind progress...

SAVE OUR ECOSYSTEMS (S.O.S.)
342 Monroe St.
Eugene, OR 97402
540 Kingswood Ave.
Eugene, OR 97405

29

January 24, 1983

Dwight L. Patton
District Manager
Eugene District Office
Bureau of Land Management
1255 Pearl St.
Eugene, OR 97401

Dear Mr. Patton,

We have previously presented to your office the following documents relevant to the Eugene Timber Management Draft Environmental Impact Statement (November 1982):

May 12, 1981 letter to Eugene District Advisory Council
May 19, 1981 " " " " " "
December 15, 1982 letter to Advisory Council and Eugene BLM
April 2, 1982 Notice of Appeal of the Preferred Land Use Alternative and other alternatives considered (March 1982)
April 5, 1982 letter of comment on the P.L.U.A. (March 1982) with attachments:
Lindsell, Timber/West, February, 1978
"All-species, All-age....," NCAF NEWS, Winter, 1981
April 27, 1982 Statement of Reasons for appeal of the P.L.U.A.
June 17, 1982 letter withdrawing our appeal of the P.L.U.A.

Also relevant to this D.E.I.S. is our:

April 30, 1982 letter of comment on the Lorane 1982 Timber Sale Action Plan

We hereby incorporate the above documents by reference into this letter of comment on the Eugene Timber Management DEIS.

I. Summary of our previous comments.

Our arguments presented in our previous documents are, briefly:

- (1) Old-growth conifer stands provide numerous environmental benefits which younger even-aged stands do not.
- (2) Eugene B.L.M. fails to adequately evaluate all of the

costs associated with clear-cutting old-growth forest.

(3) Eugene B.L.M. sustained yield calculations overestimate the allowable cut in numerous ways, and the rotation age of 40 years is far too low for any genuine sustained yield of timber resources.

(4) As old-growth is depleted, the value to society of the remaining giant trees and the environmental costs of cutting them increase exponentially (and this ten-year harvest period will essentially be the last of the harvestable old-growth).

(5) Clear-cutting of old-growth degrades the environment in a way that feasible selective cutting or all-age second-growth management does not.

(6) All-age all-species management is more productive in the long run than even-aged monoculture management.

(7) Eugene B.L.M. failed to consider various feasible selective harvesting alternatives.

(8) The environmental degradation associated with clear-cutting old-growth is cumulative, long-term and in part irreversible.

(9) It is in the best interest of the local economy to begin adjusting to a non-timber base now, before the old-growth is depleted and the timber economy suffers final collapse.

The above arguments have been most fully developed in our April 5, 1982 letter of comment on the Preferred Land Use Alternative and other alternatives considered (Eugene BLM, March 1982). The depletion of old-growth ("mining" trees) and its consequences is discussed on page 4 of that letter. On pages 5-10 we argue that our finite world system imposes limits on our national economic growth which we are now approaching, and that we must therefore act immediately to conserve diminishing depletable resources (old-growth is depletable over at least a couple of hundred years cycle). On pages 11-14 we argue that the national economy will continue to decline, and that reductions in allowable cut (declining yields) are appropriate at this time (and also to wean the local economy from its timber base in time to avert a sudden future collapse).

The remainder of our April 5, 1982 letter (pages 14-19) discusses impacts of the program on: timber supplies for the future, sustained yields and reforestation cost-effectiveness (with criticisms of the yield tables).

With the April 5, 1982 we attached two articles on the selective-cut, all-age management systems we wanted you to consider as alternatives in the EIS, but which you ruled out as unfeasible, over our objections.

Our arguments were further presented in our April 27, 1982 Statement of Reasons for our appeal of the Preferred Land Use Alternative and other alternatives considered. We withdrew this appeal by a letter of June 17, 1982 because the Eugene District Office convinced us that the Interior Board of Land Appeals would not review an appeal prior to the decision to adopt the F.E.I.S.

Although we withdrew that appeal, we want you to consider our April 27 Statement of Reasons as a continuation of our April 5, 1982 letter of comment. In the April 27 statement we argue that the Preferred Land Use Alternative and other alternatives considered document does not demonstrate an adequate resource analysis. On pages 7-9 we discussed the short-term demand for timber and Eugene's economy ("Timber industry isn't the answer" - the Pantus report, April 21, 1982) and the "industry shift" to the South. On pages 9-10 we discuss other resource losses associated with clear-cutting and depletion of old-growth timber stands.

II. The Oregon Natural Resources Council letters.

The Oregon Natural Resources Council (formerly the Oregon Wilderness Coalition) presented on January 3, 1983 a letter of comment to Coos Bay District BLM on the proposed decision for the South-Coast Curry Timber Management Plan, and on January 4, 1983 they presented to you a letter of comment on the Eugene District Timber Management Plan. As we concur entirely with the legal arguments that the Oregon Natural Resources Council gives in those letters, we hereby incorporate herein by reference those letters and the legal arguments they contain as representing our position.

We add that the new criteria for land use plans and harvest determinations approved by assistant secretary of the Interior Garry E. Carruthers and issued by BLM Director Robert Buford in July 1982 violate numerous environmental protection laws, as explained in the Oregon Natural Resources Council letters, and especially violates the principle of multiple-use in failing to provide for non-endangered wildlife protection. Also, we hold that declining flows are most appropriate. In this regard see the attached article by Randall O'Toole, "Putting It All Together: A Proposal for Forest Plans," Forest Planning, December, 1981. (Attachment #1 to this letter.)

aerial use of herbicides, and it fails to disclose scientific controversy about the extent of leaching or persistence and about whether there is a "safe dose" of these herbicides.

(iv) Vegetation. The D.E.I.S. fails to give adequate discussion of the costs associated with progressive depletion of old-growth. It says only on page 52: "The full scope of potential benefits that might accrue from old-growth retention is yet unknown." This statement is no substitute for a more complete analysis. For instance, one issue is the importance of populations of mature naturally-evolved micro-genotypes of major conifers of sufficient extent to provide both genetic stability and variability in seed strains. There is also no worst-case analysis of this gap in available scientific information about benefits that might be lost. For a discussion of some of the unique environmental contributions of the giant conifers see Attachment #3 to this letter, Richard H. Waring, "Land of the Giant Conifers," Natural History, October, 1982.

The D.E.I.S. does not adequately discuss the issues of sustainability of timber yields and long-term impacts on forest productivity. See pages 14-19 of our letter of April 5, 1982, Attachment #1 to this letter, and the following reports which we hereby incorporate herein by reference:

Randall O'Toole, The Citizen's Guide to Forestry and Economics, Cascade Holistic Economic Consultants, July, 1980.

Randall O'Toole, Subsidizing the Timber Industry: The economics of national forest mismanagement, CHEC, March, 1980.

Randall O'Toole, A New Reality: Timber Land Suitability in Oregon National Forests, CHEC, July, 1979.

We asked you to consider reforestation cost-effectiveness on marginal lands on pages 16-17 of our April 5, 1982 letter of comment, but you did not do so. The D.E.I.S. also fails to disclose our arguments that replacing valuable older trees by an equivalent volume of young trees is not what is intended by "sustained yield," that it is a sleight-of-hand designed to hide the mining of old-growth, and that even this incorrect goal of replacing old-growth with an equivalent volume of relatively valueless young trees is not being met.

There is no discussion of the significance of planting monocultures of conifers in general and Douglas-fir in particular, nor of the environmental consequences of over-stocking conifers, thereby greatly reducing plant species diversity. "The most sterile successional stage, in diversity of both plant and animal species, is a dense, rapidly growing young conifer forest . . ." Franklin et al., Ecological Characteristics of Old-Growth Douglas-Fir Forests, PNFRS, 1981.

III. Comments on the Draft E.I.S.

On some subjects the D.E.I.S. appears to give a credible analysis of probable impacts. In fact, the D.E.I.S. offers plenty of evidence as to why the proposed action should not be adopted. However, it is our present task to identify deficiencies in the analysis.

(1) The D.E.I.S. fails to give "full and fair discussion" (40 CFR 1502.1) of probable environmental impacts.

The D.E.I.S. gives some discussion of effects of herbicide use. Our comments on herbicide impacts have been given to Eugene BLM in our Statements of Reasons for our appeals of the 1982 herbicide applications and in our letters of comment regarding the Eugene District 1983 vegetation management program and Environmental Assessment report. We hereby incorporate those documents herein by reference.

The discussion of environmental consequences of this action given in Chapter 3 of the D.E.I.S. is deficient in the following ways:

(i) Air quality. There is no discussion of the loss of oxygen production due to depletion of mature conifer stands; no discussion of aerial drift and volatilization from the use of herbicides; no discussion of human health implications of smoke inhalation from burning operations.

(ii) Soils. While there is some discussion of long-term and irreversible losses in soil productivity from compaction and erosion, the D.E.I.S. fails to examine the implications for timber productivity. There is not adequate disclosure of the severity of landslides caused by clear-cutting: see Attachment #2 to this letter, Jack Desmond, "Massive mudslide covers Highway 101," Wild Oregon, January-February 1982. There is no discussion of losses of nutrients and humus build-up in soils due to killing of brush and hardwoods with herbicides, nor of possible herbicide impacts on soil microflora and productivity.

(iii) Water. Under water quantity, there is no discussion of the environmental implications of larger stream flows: i.e. that the land is not as capable of retaining and using the available precipitation for biological productivity. Under water quality, there is no discussion of adverse effects of increased influxes of nutrients, either from soil disturbance and erosion or from killing of cover species by logging or with herbicides. Regarding herbicides the D.E.I.S. fails to disclose that Cameron and Anderson (1977) found that stream contamination is inevitable with

There is no discussion of the mutagenic effects of herbicides on plant species, nor of adverse genetic or health effects of herbicides on conifer seedlings, nor of adverse ecosystem effects due to herbicide killing of vegetation and reduction of plant species diversity.

Under threatened and endangered plants, there is no identification of endangered species that might be affected, no discussion of minimum ranges necessary for survival, and no discussion of the impacts of clear-cutting and herbicide use on these particular species in their Eugene District range.

There is no discussion of the environmental impacts of not allowing stands to mature beyond 90 years. The D.E.I.S. cites Lang (1980) and Franklin et al. (1981) also show that old-growth characteristics do not appear in a stand until 175-200 years of age.

There is no discussion of the impact of the proposed management techniques on timber quality. There is no disclosure of controversy about the relative productivity over the long term of clear-cutting and selective harvest systems, nor disclosure of controversy about BLM's attempt to overstock regenerated stands in order to justify the overcutting of old-growth timber. Nor is there disclosure of criticisms of the yield tables, of the allowable cut effect, of discount rate, or of the selected timber flows.

(v) Animals. The D.E.I.S. reports that 36 species of wildlife depend on old-growth forests, but does not identify all the species nor completely examine the effects on each of them of the proposed action. Nonetheless, we commend the D.E.I.S. for disclosing on page 55 that: "over the long term only Alternatives 9 and 10 will provide mature and old-growth forests in sufficient amounts . . . and location to maintain minimum viable populations of those animal species dependent on those habitats. If any alternative other than 9 or 10 is selected, the impacts will be extremely adverse."

While the D.E.I.S. discusses the diminution of diversity by intensive timber management activities, it fails to adequately discuss the effects of this "sterility" on animal populations.

The D.E.I.S. fails to discuss a recent study which shows that elk prefer old-growth forest. See Attachment #4 to this letter, "New Study Shows Elk prefer old growth forests," Wild Oregon, May-June 1982.

The discussion of herbicide toxicity to animals on pages 59-60 is not adequate. Small animals can be exposed to acute doses of these herbicides at standard application rates, let alone during

accidents or mixing mistakes. As the herbicides take time to break down and also since they become incorporated into plant tissue, animals living on a sprayed unit may be expected to experience chronic poisoning over several months to a few years. Chronic effects on small mammals have been documented in toxicological testing of many of these herbicides. Also, species that travel thru a range of BLM sites could receive repeated doses. Finally, the tumor-formation or birth-deforming actions of these herbicides can occur even at minute doses. The potential danger to wildlife from acute poisoning is moderate and from chronic poisoning is high.

The D.E.I.S. also fails to discuss the effects of herbicides on insects and other food organisms and how that affects the wildlife food chain. It fails to discuss the possible chronic toxicity of diesel to animals.

We question the D.E.I.S. conclusion that deer populations will not be reduced by this action.

29-6 Fish. While many adverse impacts to fish populations are accurately identified, the D.E.I.S. does not fully assess the magnitudes of these various impacts and the probable losses of fish populations. We hold that projected increases in coldwater fish populations shown on page 62 (presumably from stocking of currently understocked streams) are not the relevant variable here; the D.E.I.S. needs to examine the magnitude of probable losses to potential fish habitat, food supplies and maximum sustainable populations.

In discussing herbicide toxicity to fish and fish food organisms the D.E.I.S. does not disclose evidence and scientific controversy about low-level chronic toxicity to fish, fails to discuss Cameron and Anderson's concerns about the greater susceptibility of fry, eggs and fish-food organisms than of mature fish to herbicides, and fails to disclose controversy about reliability of EPA's water quality standards. (See our letters on the 1983 Eugene BLM vegetation management program.)

29-7 Threatened and endangered animals. Do the known nest and roost sites encompass all of the probably existing sites? On page 62 where the D.E.I.S. says "30 year-old forests" should that read "300 year-old forests?"

The D.E.I.S. clearly documents that there will be adverse impacts on bald eagle and spotted owl populations, but the impacts are not fully discussed. See the attachments to this letter;

Attachment #5: Jack Desmond, "Whither the spotted owl?,"

for carcinogens and mutagens. There is not adequate discussion of the scientific literature on herbicide toxicity nor disclosure of scientific controversy over the significance of existing toxicological testing data. A table of acute toxicities is displayed on page 68 with no explanation that there is no correlation between acute toxicity and low-level chronic genetic toxicity such as carcinogenesis. There is no worst-case analysis of the I.B.T. data gaps: i.e. that all these herbicides may be carcinogenic, mutagenic, teratogenic and neurotoxic.

29-9 (xi) Economic conditions. A critical flaw in the D.E.I.S. economic analysis is the failure to look beyond the end of the ten-year period. Eugene BLM will cut virtually all the remaining old-growth in ten years; old-growth is the actual mainstay of the timber economy. Adopting this program will therefore drive the local economy to a drastic collapse in ten years. In our April 5, 1982 letter we discussed the principle of gradually reducing resource consumption in order to avoid a sudden collapse when supplies are exhausted. This means a program of progressively declining timber yields in order to ensure a greater sustainability of old-growth timber resources beyond the ten-year period. Declining yields must be coupled with a program of actively diversifying the forest's services, improving the management of second-growth, and of diversifying the entire local economic base, to wean it from an inevitably fatal dependence on old-growth timber.

Another flaw in the economic analysis is the absence of a complete cost-benefit analysis, including a marginal lands reforestation cost-effectiveness analysis. In the cycle of depletion of old-growth, there is a point past which the remaining giant trees are of more value to society than the timber and jobs which harvesting provides. An economic analysis should be made to estimate this point, with declining harvests projected to end the cutting of old-growth at that point.

29-10 There is no discussion of the issue of an industry shift to the South where second-growth matures more quickly, nor of the local economies need for diversification and for increased independence from timber flows. There is no discussion of impacts on opportunities for diversification of forest products nor on the tourism sector of the local economy.

29-11 Timber industry employment. The D.E.I.S. fails to disclose that the sources of timber have become less diversified as the timber companies have cut down their holdings. The fact that most remaining old-growth is on government land underscores the importance of preserving the last of this resource. The local wood products industry needs to be re-tooled to adjust to smaller second-growth and hardwoods.

Wild Oregon, November-December, 1981.

Attachment #6: "Book Talk: 20% of old growth should be left; Spotted owls require at least 1000 acres," Wild Oregon, March-April, 1982.

(vi) Recreation. There is no discussion of the unique recreational values of old-growth stands and environments. Such stands provide numerous recreational benefits that are not provided by younger stands. There is no discussion of adverse effects of herbicide applications on recreational use patterns, nor of adverse effects of killing non-coniferous species on the recreational value of the forest.

(vii) Cultural Resources. What is your definition of "ground disturbance?" Every site that is to be clear-cut should have a complete cultural resource survey. What is the estimated magnitude of impact of the proposed action on cultural resources? The D.E.I.S. gives backgrounds discussion but does not attempt to answer this question.

(viii) Visual Resources. Visual impacts are discussed in abstract terms like "contrast" but not enough discussion is given to the specific visual impacts of old-growth, clear-cuts, even-aged stands, intensively managed stands, all-age stands, all-species stands or of the various age classes (including second-growth classes older than 90 years).

(ix) Areas of Critical Environmental Concern. What are the expected adverse effects on important resource values in the Fox Hollow, Camas Swale and Mowhawk areas?

(x) Special Areas. What are the adverse impacts that may occur on the seven sites with natural or environmental education values?

(xi) Human Health. There is no discussion of impacts on human health of reduced oxygen cycling due to loss of giant old-growth, nor of effects of slash burning, flame retardants or herbicide carries on human health. The elimination of old-growth also has an adverse effect on psychological and spiritual health.

29-8 Our criticisms of Eugene BLM's assessment of human health risks from herbicides are given in our referenced letters. The D.E.I.S. likewise fails to properly disclose the probable impacts. There is no discussion of Cameron and Anderson's conclusions about water contamination nor of other controversy about the extent of spray drift and volatilization and herbicide leaching and persistence in soil, plants, ground water and surface water. There is no disclosure of controversy about whether there are safe doses

29-12 Public services. The O & C revenues are only going to be strong as long as there is old-growth to cut: then they will collapse. It is necessary to begin adjusting to declines in these revenues now, gradually, rather than later, catastrophically.

Attitudes and opinions. BLM could take many actions which would utilize forest products currently going to waste, but there is no incentive as long as the valuable old-growth is readily available. Regarding Alternative 8 which eliminates the use of herbicides the D.E.I.S. hypothesizes an increase in conflicts between manual forest development workers and loggers and wood products workers, but it fails to discuss the actual conflicts that occur repeatedly between forestry workers, government employees, and other parties over the use of herbicides.

Community stability. The D.E.I.S. fails to discuss the potential future effect of community stability when the old-growth runs out suddenly, especially in those communities that are most dependent on Eugene District BLM timber. The D.E.I.S. recognizes that alternatives that emphasize particular issues are likely to be divisive, without discussing the extent to which the proposed action actually represents a timber-only or maximal-timber use plan.

29-13 (2) The D.E.I.S. fails to give various worst-case analyses (40 CFR 1502.22).

The D.E.I.S. fails to give a full disclosure and worst-case analysis of numerous gaps in the relevant scientific knowledge, including most prominently:

- (i) benefits accruing from old-growth retention;
- (ii) chronic effects of herbicides on fish and wildlife;
- (iii) human health effects of herbicides.

29-14 (3) The D.E.I.S. fails to give a complete cost-benefit analysis (40 CFR 1502.23).

This D.E.I.S. needs to show a complete benefit-cost table for this action including quantified, unquantified and unquantifiable benefits and costs, including known probable risks and the magnitudes and probabilities of their occurrence. It should include an analysis of reforestation cost-effectiveness on marginal lands and an estimation of the point at which the overall social value of the remaining giant conifers exceeds their value as timber. A marginal lands analysis was given in the Roseberg E.I.S.

(4) The D.E.I.S. fails to adequately describe and develop alternatives.

In our letter of April 5, 1982 and at the Scoping meeting on that date we asked Eugene BLM to consider a selective-cut, all-age management alternative, but as shown on page 81 of the D.E.I.S. this was ruled out as unfeasible because of "non-sustainability." We disagree; the clear-cutting of old-growth is far less sustainable in the long run. The D.E.I.S. fails to adequately examine this alternative. The maintenance of crown-cover, natural regeneration, and thinning of dominant conifers is a more productive management system for second-growth timber and also provides a maximum of multiple-use values. Greater productivity in second-growth would facilitate the relinquishment of old-growth harvesting. See the following attachments to this letter:

Attachment #7: Richard Smith, An Uncommon Timber Management Program, Industrial Forestry Workshops, September 23 and 29th, 1976.

Attachment #8: Richard Smith, Woodland Management, Inc., Farr Tract Tree Farm: A Research Forest for Small Woodlands, January 2, 1976.

The D.E.I.S. also fails to examine alternatives which would diversify the economic services of the forest, such as hardwood management, slash utilization, edible berry management, expanded recreational facilities and revenues, and so on.

IV. Comments on the Proposed Action.

We hold that a complete cost-benefit table and analysis for this action would show that it is not cost-effective when resource losses and long-term costs are considered. The D.E.I.S. documents numerous significant adverse impacts on vital resources, many irreversible, and there are still others that it fails to disclose. While the need for jobs in this area is undeniable, we hold that the cutting down of the last of the old-growth is not the only or the best way to provide those jobs.

Sincerely,

Michael Slattery
Michael Slattery
Save Our ecoSystems (S.O.S.)
342 Monroe St.
Eugene, OR 97402

With 8 attachments.

Note: all future replies in this matter should be sent to Michael Slattery at the address given immediately above.

Response to comments in Letter 29.

29-1 Irreversible losses in timber productivity as a result of landslides are indicated in Table 3-2. The acreage was calculated from results of studies on the Mapleton Ranger District in 1979 by Hughes and Edwards and by Ketcheson and Frochlich 1977. These are the only local data that describe landslides in terms of area disturbed per acre. The Eugene BLM District has set aside approximately 7500 acres that will be removed from the allowable harvest base as critical landslide sites are identified. These sites are identified during the standard review of proposed timber sales. The system includes a sophisticated predictive landslide model that was developed on the Eugene and Coos Bay BLM districts. The acreage that is set aside is excluded from our current allowable harvest base.

The half life of currently approved herbicides is short. The abundance and diversity of soil microorganisms is huge. The opportunity of damage to the soil microorganisms by herbicide application is quite limited and the resilience of these organisms is quite high.

29-2 The expected water yields and percent increases due to each alternative are given in Table 3-5. These increases are insignificant (a maximum of 0.75 percent). The impacts to the stream ecosystem will be small and localized. Any increased summer flow would enhance fish habitat by increasing the amount of rearing habitat and lowering temperature, and would increase supply of water for other uses. Increased fall peak flows would cause increased erosion only when large storms occur in the fall. These changes are localized to small streams.

The reason for the increases in water yield is that there will be less transpiration due to vegetation removed. The capability of the land to retain and use available precipitation for biological productivity is unaffected.

The impacts from increased nutrients are addressed in the Water Quality Section, Impacts on Water Resources, Chapter 3 of the DEIS.

The impacts from herbicide applications are discussed in detail in the Vegetation Management EIS (USDI, BLM 1978).

29-3 See response to common issue 4.

29-4 See response to comment 6-1.

29-5 The "new study" is Witmer 1982. Results of that study were included in the analysis of impacts on elk. See elk discussion in common issue 2.

29-6 The impacts described in the DEIS would occur primarily in the area of timber harvest, site preparation and road construction. Some impacts could occur downstream through possible increases in siltation. In developing the overall impacts in the District, consideration was given to all aquatic habitat and not just habitat near areas of planned management activities. Most timber areas near anadromous fish habitat are already harvested. Vegetation is recovering both along the streams and on adjacent slopes. As a result, sedimentation is declining, shading of streams is improving, and overall conditions are on a generally improving trend. Improved road construction and harvesting methods are expected to reduce any additional harm, so that overall upward trends are expected with the exception of Alternatives 1, 2 and 6, where some decline is expected because of inadequate buffers. The increase in fish numbers is expected to come because of improved habitat, and is not a result of any stocking program.

29-7 No other sites have been located. See common issue 2. Where the DEIS says "30-year old forests (p. 62 DEIS), it should have said "30-year, or older, forests". Such forests may provide marginal forage. The FEIS has been corrected.

29-8 Human health risk assessments and impacts are included in numerous reference documents listed in the draft EIS, e.g., FEIS Vegetation Management with Herbicides, Western Oregon 1978 through 1987. A current document evaluating hazard risk and exposure, Impacts of Herbicides on Human Health - Worst Case Analysis, BLM, 1983, is available at the Eugene District Office.

Cameron and Anderson's monitoring conclusions are discussed in the Impacts on Animals section of Chapter 3.

29-9 Table 3-10, page 56 of the DEIS indicates that Alternatives 1-5 and 7-10 would still retain, 100 years from now, more than 8,900 acres with timber 196 years and older. The District's allowable cut printouts indicate that in all alternatives except Alternative 6 the Eugene District would continue to sell timber in age class 196 years and older through the year 2000.

29-10 Diversification within the local forest products industry is a function of marketing effort by industry and consumer acceptance. Diversification of the local economy away from dependence on wood products is a function of the region's proximity to markets, labor force development, infrastructure and a host of other factors outside the scope of this EIS. A possible shift of capital investment by some firms to other geographical areas and the factors influencing diversification of the local economy are discussed in the District's Planning Area Analysis. That document along with other BLM inventories gave BLM managers baseline information necessary to prepare the District's plan and preferred alternative.

29-11 Without question, more mature timber exists on federal ownerships in western Oregon than is available on private or other public ownerships in the western half of the state. Exclusion of mature stands from the timber base on which an allowable harvest is calculated reduces the volume offered for sale, the harvest level, and has a negative effect on timber industry employment dependent on federal sales. A gradual conversion of wood products facilities to smaller timber is expected no matter which alternative is adopted by the Eugene District.

29-12 The southeastern U.S. has a large wood products sector which produces lumber, plywood, pulp and paper products. Many rural communities in the southeast are almost entirely dependent on this production and very little of the timber used is "old-growth" timber.

29-13 A worst case analysis is provided where there are gaps in relevant information or scientific uncertainty exists.

29-14 A cost-benefit analysis was not prepared for the proposed action or other alternatives. A cost-benefit analysis is not mandated by CEQ regulations.



LANE COUNTY AUDUBON SOCIETY

AN OREGON CHAPTER OF NATIONAL AUDUBON SOCIETY

P O BOX 5086 • EUGENE, OREGON 97405

30

Mr Dwight L Patton
District Manager
Bureau of Land Management
P O Box 10226
Eugene OR 97440

January 24, 1983

Re: Eugene Timber Management
Draft Environmental Impact
Statement (DEIS)

Dear Mr Patton,

The alternatives presented do not result from the scoping process of the environmental analysis procedure, contrary to the statement in your introductory letter in the DEIS. The Preferred Alternative certainly did not arise out of discussions with the public or resource agencies, but was handed down from above. Perhaps that is why the suggested issues (p. 82 of the DEIS) are not addressed. At any rate, no other explanation was offered.

We can say right at the beginning that we do not agree with the interpretation of the O & C Act on which the Preferred Alternative is based. We do not find any of the alternatives acceptable, but that is partly because the analysis furnished is rather sketchy.

The East-West Corridor concept seemed promising, but without maps and overlays to indicate where it is and how much old growth it contains, it was difficult to evaluate. Conversations with staff revealed that there are 25 miles of the corridor that have no old growth at all, so it is not really a viable alternative for the first decade or probably any decade.

The former Preferred Alternative, Alt. 7, sets aside insufficient old growth, there being only 21,000 ac. at any time whereas 45,000 is needed to meet minimum wildlife needs. This alternative relies upon an "extended rotation" concept. The extended rotation acres were to undergo partial harvest to "hasten decadence". We note that whenever we have asked for partial harvest (for whatever reason) we have always been told that re-entry into the stands causes soil compaction and damage to young trees, and so the decision has always gone to clear-cutting. We wonder why these effects are not a deterrent to partial cutting in the extended rotation acres?

We have given serious consideration to Alt. 3, the Deferred Alternative. It has some serious shortcomings which are not discussed in the DEIS. We might compare it with the experience

Eugene District BLM TM DEIS

2



that the USFS had in leaving the roadless areas in the allowable cut calculations during the RARE II process. After several years, the non-roadless areas had been seriously over-cut. The USFS then put forth the following argument against wilderness designation of the roadless areas: we need the timber in the roadless areas to keep up the cut; we have overcut the roadless areas and can't get any more timber out of them at this time. We are not talking about wilderness on the Eugene District, but the principle is probably the same. The old growth areas would be cut in the future unless the attitude toward the allowable cut is changed. Meanwhile, the rest of the forest is devastated from the point of view of wildlife, water quality, recreation, scenic views, because clearcuts will be too close, younger trees will be harvested requiring vast acreages, there will be reluctance to leave green trees for any reason, and so forth.

A second problem with Alt. 3 is that only 25,000 ac. is deferred. In order to make a significant difference in the forest composition, 15%--or the entire existing supply of old growth--must be deferred. This would certainly exacerbate the problem of over-cutting on the rest of the forest.

It is true that the O & C Act does not specifically mention wildlife but protects watersheds and recreation. Taking a human-centered view, however, we can say that wildlife is recreation. Providing for wildlife, whether for shooting, angling or viewing is providing for recreation. Of course, the health of the forest may depend upon certain species of wildlife. Table 2-23 shows clearly that people want more wildlife and less ORV use. Indeed, those are the only clear results in the table. Recreation means more than campgrounds, ball fields and ORV use.

Likewise, protecting watersheds means more than no longer logging headwalls of streams in slumpy soils. It means protecting the riparian zones. Withdrawal of riparian zones on third order and larger streams is not sufficient. These lands make up only 5% of the riparian zones, and, of these, 40% have already been harvested. The DEIS discusses the effects of removal of trees of over 100 ft. from the riparian zones (p. 60) in terms of fish and says that the overall quality of habitat will decline even when hardwood buffers protect water quality. The loss of stream structure when large woody debris does not fall into the stream results in a decline of productive capability of the stream. Not one alternative presented in the DEIS reverses the decline in fish habitat. Protecting the riparian zones for fish and wildlife could easily be charged to watershed protection and water quality under the law and provide other benefits.

Eugene District BLM TM DEIS

3

We cannot accept any of the Alternatives in the DEIS. We propose the following:

LCAS Alternative

Freeze all existing old growth (48,500 ac as of 1978) so that 15% of the forest will remain in old growth and maintain species diversity.

Protect all riparian zones in the coastal drainages. Partially protect riparian zones of the east side of the District by leaving sufficient large trees, snags, and down logs and managing the transition zone as described in the DEIS.

Establish and maintain, with enforcement and monitoring, and specific personnel responsibility, a snag and down log retention policy. Snags should be maintained throughout the District and are best preserved by making them part of a standing group of green trees which will protect the snag and themselves become snags of the future.

Restore, over time, connecting corridors between existing stands of old growth. Remove the old growth reserve from the allowable harvest.

Reduce the acreage to be thinned sufficiently to provide habitat for accipiter hawks and cover for elk.

Protect all (22) alternate eagle nest/roost/perch sites.

Protect spotted owl habitat in accordance with an interagency plan.

Preserve Windy Peak for recreation because it is a large block allowing primitive recreation experience, because it provides for animals requiring solitude, and because the soils are very prone to slides.

Plant minor species and protect upland hardwoods for habitat where essential. Provide for plantations of all forest tree species.

Eugene District BLM TM DEIS

4

We offer the following specific comments about the DEIS:

Summary p. iii The 17,000 ac of public domain should be separated out and receive management under Federal Land Policy and Management Act since you claim the O & C lands are not subject to FLPMA.

p. 5 We object to the generalized term "genetically improved stock". The more appropriate words would be "faster growing in the early stages".

p. 6 Timber Harvest. Clearcut size and spacing is not discussed fully. Spacing problems are suggested, but how much of a problem is it and what remedies are proposed?

p. 8-9 Release, thinning etc. Thinning is needed because of over-planting and release is employed because of not wanting the natural thinning to take place by natural selection. Planting fewer trees is discussed in the section on riparian transition zone management. There it is clear that not thinning reduces the allowable harvest. Take credit for reducing costs and allowing other plants of the ecosystem to have their place and develop symbiotic relationships with the commercial tree species.

p. 11 Requirements for Further Environmental Assessments. EARS should assess cumulative impacts.

p. 13 State and Local Govt. As the Sikes Act seems to be critical to your program, it would be helpful to reproduce your agreement with Oregon Dept. of Fish & Wildlife.

p. 27 Table 2-7 It is not clear to the reader that US Forest Service lands are included here. The reader needs to know that these lands will or will not be harvested in order to interpret the table. In the Appendix, it becomes clearer that even Alt. 10 cannot prevent the old growth from diminishing below the critical point in the SFU.

p. 27 The list of species referred to should be included in the FEIS. You should counter the mis-conception that only a few owls are going to be lost under the TM program.

What is the source of the information in Table 2-22?

All references to 300 ac core of old growth for spotted owl habitat should be deleted. The figure is obsolete according to recent research sponsored by the Eugene District.

The bibliography should contain the works of Eric Forsman, foremost authority on the n. spotted owl.

p. 58 Table 3-12 Table should show each decade or year to make it comparable with the other tables.

30-1



30-2



30-3

30-4

30-5

30-6

30-7

30-8



As the DEIS points out (p. 42) Tables 2-24 and 2-25 are not intended to suggest that the specific communities mentioned would receive the amount of BLM timber shown in any future years. It would be helpful to devise a table to show when they could not receive that amount. When would harvests near heavily dependent communities be exhausted and what "timber supply gap" (if any) would occur in each decade under each Alternative?

Slides which were shown to the public at the January 12, 1983 meeting in Eugene illustrating % old growth under each alternative as a function of jobs lost or added should be reproduced in the FEIS. Evidence for the job increases or decreases should be included. Jobs versus wildlife over the long run is of interest. In calculating job losses, has increasing automation been taken into account? How many of the jobs are BLM jobs?

30-9

We note that (p. 63) in Alternatives 1-6, the bald eagle, Federally listed as Threatened would be adversely impacted in the long term. We wonder why there is no explanation for the choice of Alt. 4 in these circumstances. Please put an explanation in the FEIS of the Bureau's role in the protection of listed species.

30-10

In conclusion, it has been something of an ordeal to participate in this planning, whose conclusion seems to have no relationship to the public's participation, to the staff input. It remains to be seen whether it has the necessary relationship to the laws governing planning. Certainly the most stunning piece of information in the DEIS is the fact that on the Eugene District, cavity dwellers are already below 34% where the 40% level is considered critical for maintaining breeding populations. Surely, the time has come for remedial action.

Sincerely yours,

Jane Rodin
President

Sydney Herbert
Conservation Committee

Response to comments in Letter 30.

- 30-1 Elements of the proposed LCAS Alternative are incorporated in one or more of the alternatives described and analyzed in the EIS.
- 30-2 There are approximately 9,300 acres of public domain lands on the Eugene District. See response to comment 3-1.
- 30-3 The term "genetically improved stock" refers to seedlings which have been selected through the application of genetic principles and testing. It describes the method used to produce the result of faster growing trees.
- 30-4 Clearcut acreage would average 4,127 acres annually during the 1983-1993 decade. The size and location of harvest units, and their spacing within the existing harvest age type, are determined initially in the five-year plan and then selected in the annual timber sale plan.
- The harvest unit size is normally limited to one or more "settings" not exceeding 40 acres in size. Whenever possible, harvest units will not be located adjacent to stands harvested within the previous five years. Obviously, as available acreage of harvest age timber decreases, this placement strategy becomes more difficult.
- 30-5 See response to comment 11-2.
- 30-6 See response to comment 9-1.
- 30-7 Estimates were prepared by State Office EIS staff. Details of the calculations are found in the Eugene District Planning Area Analysis.
- 30-8 In Alternatives 1 to 8 there would be a drop to non-viable population levels at the end of the 1st decade and declines would continue thereafter. Under Alternatives 9 and 10 it would take 5 to 6 decades to reach the 60 percent optimum population level.
- 30-9 A discussion of labor productivity has been added to Impacts on Economic Conditions, Chapter 3.
- 30-10 See response to comment 21-20.

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31

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Rex Timber Inc.

January 24, 1983

Mr. Dwight Patton, District Manager
Bureau of Land Management
Page 2

Wildlife (Cont'd)

There is considerable discussion regarding "optimum" populations with no numbers given. Percentage increases or decreases don't mean much without baseline numbers to correlate with. Under O & C Forest Policy, wouldn't "necessary" populations be adequate over "optimum"? The Oregon Department of Fish and Wildlife is beginning the process to set management objectives for Roosevelt Elk. Will the BLM Plan dovetail with these or are we looking at a totally different system with totally different numbers?

Silvicultural and Timber Stand Improvement Programs:

The plans for increasing timber productivity, i.e. planting, plantation protection, plantation maintenance and release, precommercial thinning and fertilization, are to be applauded. The plan contains a good mix of management activities and we would offer our support and urge you to proceed with these programs.

Economics:

The general base data and the socio-economic impacts appear to be well researched and accurate. The increase in projected O & C disbursements to counties and the increase in jobs as depicted by Alternatives #1 through #4 are encouraging and we would encourage your final decision to reflect this.

Summary:

We realize that this planning task is a monumental one and we certainly appreciate the effort that has gone into this Draft. We have some basic concerns, however, with the reduction in the Intensive Timber Production Base in favor of intensive management and the considerable emphasis on wildlife to the detriment of some forest management practices. Alternative #4 seems to us to be a good attempt to balance the various concerns in terms of the O & C Policy Criteria. We would support this Alternative provided that the allowable cut not fall below the annual 230 million board feet due to budget restrictions.

We appreciate this opportunity to comment.

Sincerely,

Carl F. Ehlen

Carl F. Ehlen
Chief Forester

CFE/jp

cc: Mr. Robert F. Kline
Mr. Dewey L. Mobley

January 24, 1983

Mr. Dwight Patton, District Manager
Bureau of Land Management
P. O. Box 10226
Eugene, OR 97440

Dear Mr. Patton:

We have received and reviewed the Eugene District "Draft Timber Management Environmental Impact Statement" and would offer the following comments and questions for your consideration.

Timber Production:

The Preferred Alternative (Alternative No. 4) proposes to produce an additional 11 million board feet of timber on a land base of nearly 23,000 acres less than the Continued Direction Alternative (Alternative No. 6). This corresponds to an increase in production of 100 board feet per acre per year. The implication is that this additional production will be attainable if the funding for an intensive management program is obtained. If the funding does not become available either in part or in whole, however, the allowable cut could conceivably be reduced by up to 27 million board feet per year. If this occurs, is there the potential for opening up some of the lands withdrawn for the seral stage distribution and/or for partial cutting within the commercial timber land withdrawn to protect riparian zones?

If not, the commercial land base should be kept at the current level with ongoing intensive management as funds do become available in order to assure an allowable cut of at least 230 million board feet per year.

It appears that the requirements for the "Criteria for Application of O & C Policy" have been met for the seral stage distribution, bald eagle protection, RNA's and sensitive botanical species. However, we would ask if the remainder of the commercial acreage withdrawn for riparian zone protection is necessary and whether it's legal with respect to O & C Policy?

Wildlife:

We are concerned with the emphasis put on wildlife in a timber management plan. The negative connotation that timber production reduces wildlife values is disturbing in light of the fact that we are seeing wildlife populations, and big game in particular, flourish on timber land covered with second and third growth stands. The statement that "significant elk population decreases under all alternatives except #10...." is incredulous. How do you explain the elk population buildups on land where there is a mixture of second growth for hiding and escape cover, thermal cover and young plantations for forage with no old-growth nearby? Statements such as this only tend to inflame wildlife vs timber arguments.

31-1

31-2

Response to comments in Letter 31.

31-1 See common issue 1.

31-2 The emphasis on wildlife reflects the magnitude of timber management impacts on wildlife habitat. Many species are inextricably linked to older seral stage forests. Jones and Stokes (1980) described the life histories and habitat relationships of 45 species of wildlife commonly found in old-growth conifer forests of western Oregon. This report, with over 400 reference citations, clearly shows that mature and old-growth forests provide optimum habitat for a large number of species. Thirty-eight of these are current, or recent historic, breeding species on BLM lands in the Eugene District. Examples include the bald eagle, spotted owl, goshawk, pileated woodpecker, fisher, marten and the two primary prey species of the spotted owl, the northern flying squirrel and red tree vole. That intensive timber management practices such as clearcutting, mortality-salvage thinning and roading adversely impact the primary habitat of these species is clearly evident in the section "sensitivity to resource management" in the individual species accounts. See also common issue 2.



INDUSTRIAL FORESTRY ASSOCIATION 32

SERVING FOREST OWNERS THROUGHOUT THE PACIFIC NORTHWEST
THROUGHOUT THE PACIFIC NORTHWEST

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January 24, 1983

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Mr. Dwight L. Patton, Manager
U.S.D.I., Bureau of Land Management
Post Office Box 10226
Eugene, Oregon 97440

Dear Mr. Patton:

We appreciate the opportunity to continue our review of the Eugene District Planning efforts. Our member companies vary from total dependency on BLM timber offerings to some largely self-sufficient in timber. Many have small to large land and timber holdings now moving into commercial thinning and rotational harvest states. IFA represents a spectrum of timber growers and manufacturers knowing the timber management problems BLM faces while having a vital interest in the timber and resource management where we work and recreate.

Our comments which follow will address a variety of specifics which should be clarified or intensively reviewed. In summary, however, we believe all the O & C lands which can biologically grow timber should be politically permitted for harvest. While there are elements of Alternative Four with which we agree such as increased timber harvest, this must occur on the fullest land base to minimize public costs. Even to stay with the No Action Alternate (which is described better as Continued Direction, in my opinion) coupled with intensive management practices would be a planning improvement over some of the land-locked alternatives described.

TIMBER PRODUCTIVITY

In comparing the various Alternatives, it is apparent there are inefficiencies not fully explained or explored in Alternative Four. To illustrate, Alternatives One through Four calculate to a timber yield of productivity of from 845 to 871 BF/Ac/Yr. Using an "average" of 840 BF/Ac/Yr and applied to Alternatives Five and Seven through Ten, the constrained Timber Base contributes zero or less to the timber productivity. What is the opportunity cost for the Constrained Timber Base, and what timber yields are produced per alternative?

32-1

This DEIS inadequately describes the effect of assigning away 22,864 acres in Alternative Four (compared with current direction in Alternative Six). Even as a possibility, the fewer acres in Alternative Six show an increased harvest of 11 million board feet. Data should be displayed as to the various efficiencies necessary to simultaneously reduce the land base and increase the harvest. Certainly the most economical and cost efficient technique is to maintain 22,864 acres in harvest calculations to obtain an 11 million board feet (and more) increase in allowable sell determinations.

Industrial Forestry Association

Mr. Dwight L. Patton

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January 24, 1983

32-2 The DEIS inadequately describes the management costs (and attendant appropriations) necessary to complete an average annual sell program. Where do (and will) the priorities reside if funding or timber receipts are at levels lower than even 1982? Where is the marginal cost of productivity displayed or is this even considered part of the Timber Management Analysis. And, where too are the actual costs of wildlife management displayed? Are these borne by Timber Management, or appropriated separately?

The DEIS should show that a realistic increase of 100 BF/Ac/Yr could develop an additional 30 million board feet/year beyond the current direction of 219 MMBF in Alternative Six.

32-3 Table C-1 displays the occurrence of 13,031 Acres of non-stocked land, but inadequately describes the current status of this land, whether and when re-stocking will occur and whether this acreage will contribute to the ACE for the District. Is this a significant non-stocked acreage, and for how long have these been so classed?

32-4 TPCC categories for "Withdrawn" remain a too convenient category of BLM non-management when some mitigation could and should be described for this 6,805% of the Eugene District. Where are the ACE displays for these acreages? What MMBF total inventory is involved? What is the regeneration scenario or success probability if the regeneration limits of 5 years were extended to 6, or 7, or ... 10 years?

ECONOMIC CONSIDERATIONS

32-5 In general the base data seems sufficiently well founded in publicly-available studies from reputable sources. The same may be said for the sociological impacts except for the perceived value of "jobs" lost in metro areas versus rural communities and among workers of varying ages. Income, mortgages, children in school, commuting to work and much more, are similarly involved wherever a job is located and held viable by a dependable timber supply. We challenge the technique of comparisons between metro and rural areas of job values as being worthless at best and callous in general. An impact on 60 jobs in the Eugene-Springfield metro area by Alternatives One and Eight, is important despite the descriptive line, "... because that number is barely one percent of the ... work force."

"Conclusions" on page 71 state, "Beneath today's concerns are projections for a dip in woods products production in the 1980's and 1990's due to the availability of timber. How will and is the DEIS addressing these projections? Can the dip be bridged by this District's or combined Districts' timber offerings. What possible solution could accelerated annual harvest have?

WILDLIFE

32-6 As a Timber Management Plan this DEIS is as much or more a Wildlife Plan than anything else. Once again, it is obvious the only approach the Wildlife Management element of BLM seems able to take is "preservation" of timber or dedicating land base. Their cause celebre and rallying technique is to pit timber and wildlife in an "either, or" situation; one versus the other. Seldom if ever are mitigation measures mentioned or noted as if even to think of them were to violate a wildlife "code of management". Certainly there are big game and non-game mitigation techniques available to provide for and enhance wildlife values. The Final EIS will be entirely remiss if the District Wildlife personnel are not required to completely detail what mitigation efforts will be taken in this planning period. An excellent example

Mr. Dwight L. Patton

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of mitigation techniques possible is "Woodlands and Wildlife" by Pennsylvania State University, 1979. The five authors, either wildlife specialists or biologists, detail for the private landowner methods adaptable anywhere. If this Timber Management plan is to be so very much a Wildlife plan then the contribution should be accordingly.

32-7

The very tentative wildlife studies and program seem equally weighted to proven socio-economic studies of people and communities. Needs and/or optimum studies for Spotted owls are either in progress or programmed. The indecision related to owl habitat is manifested in the dichotomy of 300 versus 1,000 acres for "preserves". By far the most decision consideration or weighting must be given to the "knowns" rather than the wildlife unknowns which so liberally lace this DEIS.

Wildlife studies can and should be concurrent with timber harvest and management. The DEIS should show proposed District studies on second growth timberlands and managed forest land, much in the manner suggested for mitigation measures. These studies can be expanded to include riparian, fisheries and non-game restoration and/or improvement.

Recreational aspects of this DEIS are addressed more in terms of big-game hunting and management, than less vigorous recreational aspects. Interestingly enough here too, big game hunting is pitted against timber management in a familiar verse. We are familiar with authors cited in these big-game studies but are appalled at the District's lack of perception of actual field conditions with respect to increases in big game populations and elk in particular. Where there were no elk twenty years ago and longer, individuals and small bands can be found consistently. The Millicoma, Cascade and yes, Willamette Valley herds certainly offer empirical evidence enough for the most myopic of wildlife specialists. These herds are currently growing and large enough to be a serious and severe problem to private timberland owners attempting to establish seedlings.

32-8

Tables 1-3 and 3-1 are singly or in combination inadequate in describing the basic elk population picture for the Eugene District. Both show percentage change in populations and habitat respectively, which gives the reader at best a general picture and worst, misinformation. Where is a table listing population numbers from years 1950 through present? Where is the graph/table showing elk population as a percent of suitable (NOT optimum) habitat? Where is the empirical reference to herd growth in both the Coast and Cascade Ranges? The annual elk kill and hunter success percentage should be shown to display how well herds have prospered with ever-increasing hunter numbers, et cetera.

Again, mitigation is degraded when an effort such as road closure to reduce human harassment can be so useful for elk management. The DEIS-reader is falsely lead to believe it is the road per se which elk avoid, when the evidence is contrary where road closures are in place. In fact where closed, roads in the Coast and Cascade Ranges appear as an elk attractant.

Elk hiding and/or survival cover described in the DEIS ignores the adaptability of this animal which ranges from a Wyoming winter to the interior California summer scorches for Tule elk. Again, optimum and necessary habitat conditions must be carefully and fully differentiated. The very fact that Oregon and Eugene District elk herds have and are expanding need to be explained beyond a simplistic chart of relative habitat percentage variation.

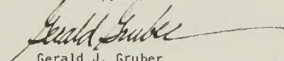
Mr. Dwight L. Patton

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January 24, 1983

A fuller and more descriptive impact scenario should be made for BLM fostered elk herds which will forage and impact adjacent private landowners in the checkerboard ownerships. Also, a display of reforestation and/or special management costs to BLM should be shown for the Eugene District. While 2.6 million acres are involved in the planning area, only 8.208 percent of "All Acres Planning Area" are in the Eugene SYU's. If the DEIS is so quick to point out its minimal impact on the planning area timbershed, it should do no less in its wildlife evaluation. Unlike timber ownership, our elk and owls can and do roam all the lands in the Planning area seeking the optimums and the necessities... strangely enough like us humans.

Sincerely,



Gerald J. Gruber
District Forester

GJG:cs

cc: Mr. William G. Leavell, State Director

Response to comments in Letter 32.

32-1 See common issue 3.

32-2 See common issue 1.

32-3 The 13,030 acres of non-stocked land displayed in Table C-1 represent those tracts of sold but yet-to-be-harvested timber and currently harvested lands not considered as stocked until the one-year reforestation survival survey has indicated that successful reforestation has occurred. Virtually no acres of non-stocked "backlog" exist. Those acres subjected to final harvest and reforestation are carried as a four-year regeneration lag period for allowable cut planning purposes.

32-4 The lands that are removed from the allowable cut base as a result of the TPCC classification are not capable of sustaining an intensive management program. These lands are low or fragile sites or have site conditions that preclude successful reforestation within five years. If the currently withdrawn lands were to be harvested, the site quality would be degraded seriously and reforestation would not be accomplished within the required period, or they could not be put back into timber production at all. The standing volume on these lands is now 515,000 MBF. The increased probability of successful reforestation by extending the reforestation period is highly dependent on the specific site characteristics. Extending the time allowed for reforestation and/or developing new reforestation techniques could reduce the amount of land currently withdrawn for reforestation problems.

32-5 See revised Impacts on Social Conditions, Chapter 3.

32-6 See response to comment 11-1 and common issue 2.

32-7 While BLM recognizes the need for continuing research about wildlife habitat needs in western Oregon forests, program proposals and analysis are based upon a significant and growing body of scientific literature. More detailed text citations have been added to wildlife sections of the FEIS, and common issue 2 expands upon research background to assist the reviewer.

The Threatened and Endangered Animals Section in Chapter 3, Impacts on Animals, discusses the reasons for analyzing northern spotted owl habitat requirements under the 300 acre criteria and the 1,000 acre criteria. Research and numerous inventories throughout the region have demonstrated that "the overwhelming preference of spotted owls for older forests is undoubtedly related to their requirements for nests, food and protective roosts (Forsman, et al. 1982). Inventories and monitoring of spotted owls since 1975 in the Eugene District have confirmed the research findings on a local basis (Forsman 1981). The Endangered Species Task Force recommendations to increase spotted owl habitats to 1,000 acres per pair were based on radiotelemetry studies of owl habitat use in the H. J. Andrews Experimental Forest (Forsman 1980 and 1981) and on BLM lands in the Eugene District (Forsman 1981).

32-8 See response to comment 11-5 and the elk discussion in common issue 2.



33

Weyerhaeuser Company

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January 24, 1983

-2-

Mr. Dwight Patton
District Manager
BLM District Office
P.O. Box 10226
Eugene, Oregon 97440

Dear Mr. Patton:

We appreciate the opportunity to comment on the Environmental Impact Statement of the Eugene District of the BLM. It appears that a great deal of thought and effort has gone into this plan in an attempt to address the multiple objectives that have been identified. It is also inherent that for detailed analysis of the entire plan, much more data would have to be available. However, we will take this opportunity to respond to some key fundamental base plan components that affect alternative rationale and the final plan direction.

We commend the plan in its extensive and well-prepared tabular displays and graphics. Even though these are excellent, there appears to be some lacking related narrative and graphical descriptions in portions of the economics, environmental considerations, and some visual management areas. These will be further referenced in the following comments.

INTENSIVE MANAGEMENT -

We emphatically support the intensive management aspects on BLM forest lands with the many positive results and benefits that come from these efforts. It would appear that BLM has adequately assessed the primary components of an intensive management program and these should be included if there is assured funding to carry out these indicated management levels.

AFFECTED ENVIRONMENT -

There are some excellent portions of the DEIS that deal with local issues like climate, air quality, soils, vegetation and related items. However, it would seem that the narrative on the soils portion has a

very limited time period in the natural background relationships. We suggest that on well-managed forest sites -- with their very vigorous forests -- there are many positive benefits in air, soil, and water relationships that are basically ignored in the BLM plan.

Intensive management will provide significant improvements in protection from devastation and catastrophic events, which is ignored, when it is very much a factor in the natural processes. These favorable relationships should be mentioned. For example, where are the past extent of "natural fires" and their impacts on soil, water, and air discussed in any degree? We suggest that the plan could have been more positive in its discussions of soil, wildlife, air quality, economics and other topics throughout the document.

GAME HABITAT -

33-1

The plan strongly implies that the relative impact of intensive management for big game, and especially for elk, is uniformly negative. (As an example, note Table 3-11, page 57.) We strongly suggest that the habitat and forage conclusions are incorrect and we recommend that they be re-evaluated. We would offer some recent studies that could assist in this re-evaluation which would show different conclusions than those displayed in the plan.

If the assumptions for game habitat considerations are incorrect, the recommended BLM management plans forthcoming would also have to be questioned.

ECONOMICS -

We appreciate the impressive display of the economic relationships for the region, pages 33-38, as an example. However, a discussion of the total revenue distribution and the interrelationships of the BLM with other lands would be useful in any decision review.

We also note on Table 2-15, page 36, that the sales in recent years are distinctly above the removals on a sustained basis except for 1973, 1974 and 1978. A suggestion is: Should the timber sale program be more responsive to the removal levels and/or the market situation? We recommend that the timber sale program should be much more responsive to market conditions.

VISUAL MANAGEMENT -

33-2

This obviously is a significant component of the BLM plan and it is described very well in total acres and gross definitions, as on Table 3-16, page 66. However, it seems to be deficient in the specific class definitions, and where these classifications would be applied. We would also suggest that an economic display of these actual impacts be included in the plan.

SUMMARY/RECOMMENDATIONS -

In summary, we commend the BLM for their efforts to address a very complex set of issues, with the multiple objectives for lands in the Eugene District. A summary of our suggestions and recommendations includes:

- Strong support for intensive management and the inherent benefits involved in these programs over a long term basis. We submit that the funding for these programs should be assured for consideration in the plan.
- It would appear that portions of the game habitat section -- especially the big game -- need significant re-evaluation. We would offer assistance for the review with recent research and documentation on this subject.
- The economic review has portions that are very well done. However, we recommend that Eugene BLM be more responsive to market conditions with their timber sale program.
- Visual management is a significant component in the DEIS, but lacks application specifics and does not address the economic impacts of this subjective management tool.
- A reviewer of the document is led to have a generally negative view of some impacts due to intensive management. We would suggest strongly that for an "expanded time period" (not several years) compared to natural background there can be many positive benefits to air, soil, water, and society from good forest management practices. This positive relationship is minimized or ignored and is a major deficiency in the plan.

We appreciate the opportunity to comment on some of the base elements which comprise the Eugene District plan. The unavailability of all the technical data regarding the various alternatives has led to our consideration and comments regarding the primary decision components, rather than the alternatives themselves. Please request that these identified components be addressed as they will affect the management decisions of your District.

Sincerely,

Quincy M. Powers
Quincy M. Powers
Region Vice President

QMP:kb

Response to comments in Letter 33.

33-1 See common issue 2.

33-2 Visual resource class definitions and examples of areas of high scenic quality are provided in the Visual Resources section of Chapter 2. The timber volume foregone for this and other non-timber land use allocations is analyzed for each alternative in common issue 3.



Forestry Department

OFFICE OF STATE FORESTER

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34

January 20, 1983

Owight Patton, District Manager
Bureau of Land Management
Eugene District
P.O. Box 10226
Eugene, Oregon 97440

Dear Mr. Patton:

The Oregon State Forestry Department has reviewed the Eugene Timber Management Draft Environmental Impact Statement. We are pleased to note the general consistency of the preferred alternative with the basic objectives of the Forestry Program For Oregon. When compared with FPO objectives listed in Table 1-5, we find that all alternatives numbered 1 through 6 demonstrate consistency.

We should point out however, it is difficult to assess your consistency with the intensive management objective because no data are given to indicate that the level of practices planned in your 1972 Management Plan have actually been implemented. The level of implementation is a critical factor in determining the effectiveness of a timber management plan. As a minimum we feel the EIS should display the differences between the current level of intensive management practices that are accomplished as compared with the planned level.

Response to comments in Letter 34.

34-1 See common issue 1.

34-2 See the revised section on Interrelationships in Chapter 1.

34-1

34-2

On page 13 reference is made to the "regulation of timber harvest methods and supportive practices" by means of the Forest Practices Act by the State Forester. Regulation of timber harvest methods are not addressed by the Act and we request the word operation be used in its place.

We hope you will find these comments to be useful and I trust they will be given adequate weight and consideration in the final Environmental Impact Statement.

Sincerely,

Ronald E. Smith
Ronald E. Smith
Acting State Forester

RES:RW:jp

cc: Board of Forestry
Executive Staff
Congressional Delegation
Pat Amadeo
Doug Coyle
William Leavell
State Clearinghouse OR 321124-021-4



Department of Fish and Wildlife

506 S.W. MILL STREET, P.O. BOX 3503, PORTLAND, OREGON 97208

January 20, 1983

Mr. Dwight Patton
District Manager
Bureau of Land Management
Eugene District Office
P.O. Box 10226
Eugene, Oregon 97440

Dear Red:

This letter and attached comments are the Oregon Department of Fish and Wildlife's response to the Eugene Timber Management Draft Environmental Impact Statement. This response is a coordinated effort by our field biologists, regional and Portland staff, after public and personal meetings with your staff to clarify the major issues.

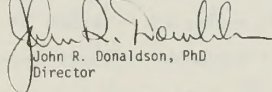
As you are aware, our staffs have worked throughout this planning process to develop a reasonable and realistic blend of resource use that would result in a true multiple use plan. However, the Bureau's criteria for management adopted in July 1982 has circumvented our planning input.

The impacts displayed in your preferred alternative for snag dependent species, overall wildlife habitat diversity, old growth, mid-aged and deciduous habitats, threatened and endangered species (federal and state) indicate viable populations of all wildlife species will not be maintained on Eugene BLM lands.

35-1 In order to have our support, the selected alternative must at a minimum be in compliance with the Wildlife Policy of the State of Oregon (ORS 496.012) and the Sikes Act Agreement between us dated May 1975. Only Alternatives 9 and 10 at this time comply with our standards.

There is a wide range of alternatives presented in the Statement but the mix of resource outputs is highly polarized. Alternatives 1 through 8 have high allowable timber harvest levels and Alternatives 9 and 10 have very low timber harvest levels. I believe the most reasonable mix of land uses lies somewhere between the two poles. I further believe Alternatives 9 or 10 could be modified to have a higher timber harvest level while still meeting our objectives. The attached comments should assist you in arriving at a satisfactory land use plan.

Sincerely,


John R. Donaldson, PhD
Director

JRD:kes

attachments

35-4 The impacts discussed need also to address resources in addition to timber. Wildlife resources suffer when the natural mixed vegetation types are replaced by a Douglas fir monoculture. What are the impacts to hardwoods as a component in vegetation diversity? It appears that only one segment of the diversity issue has been recognized, this being the Douglas fir component. We recommend additional acreage be allocated to the older seral stages and that other vegetation components be considered in the impacts of intensive forest management.

4. **Impacts on Animals** - The D.E.I.S. has clearly stated the many adverse effects of the preferred alternative (Alt. 4). The direction taken by Alternative 4 will not provide for viable populations of numerous species now found of BLM lands. In the long term this will increase the likelihood of more species being placed on both the state and federal threatened and endangered lists. A probable result would be severely restricted timber harvests and impacts to the local economy. Our Department cannot support a plan with such a tenuous proposal for management of habitat and dependent species. We believe it is in the public interest that a more rational approach to land use allocation be developed which will provide for viable populations of wildlife over the long term.

In order to accomplish these objectives we recommend the BLM re-evaluate the preferred alternatives and implement an alternative with more wildlife habitat considerations in order to protect future options management. A full ecosystem approach as originally proposed by the Coos Bay District would be much more acceptable. Additional protection of riparian habitats is necessary to insure viable populations of dependent species. Increased awareness and protection of snags and dead and down habitats is also a must. The current supply of these important habitat components on the Eugene District is very low.

The reductions that will occur in older seral stage habitats with Alternative 4 both in mature and old growth stands will eliminate future management options. We strongly recommend these components be retained in larger amounts through the next decade in order that their value and importance can be assessed.

In order for the Eugene BLM Timber Management Plan to comply with the Wildlife Policy of the State of Oregon to prevent the serious depletion of indigenous species and maintain populations of fish and wildlife at optimum levels, the Department recommends the implementation by Eugene BLM of the habitat diversity concept as originally derived by the State BLM office. The additional specific components needing implementation are as follows:

1. Provide habitat protection for threatened and endangered species.
 - a. Manage existing bald eagle habitat and potential habitat to rebuild populations.
 - b. Protect all 23 potential bald eagle nest/roost sites pending formal consultation with USFWS - then protect those determined to be "essential" or "critical".
 - c. Protect habitat for at least 23 pairs of spotted owls consistent with the interagency recommendations of 1000 acres per pair.

COMMENTS ON

EUGENE BLM DISTRICT

EUGENE TIMBER MANAGEMENT PLAN

DRAFT E15

JANUARY 20, 1983

The original proposed action as shown in the March 1982 statement had an allowable harvest of 213 mm board feet, and the preferred alternative (November 1982) has an allowable harvest of 230 mm board feet. This increase is gained primarily through elimination of wildlife habitat diversity features.

Chapter 3 of the D.E.I.S. lists environmental consequences in tabular and narrative form. We will comment on these as presented:

1. **Impact on Soils** - Table 3-3 indicates an increase of 3% in tons of landslide erosion if Alternative 4 is chosen over the original proposed action (Alt. 7) or 5% over current direction. These increases are due to increased timber harvesting activities and will have corresponding detrimental impacts on fisheries resources. These adverse impacts may be mitigated to some extent by protection of riparian areas along stream order 3-6, and are reflected in Table 1-3.

Storms during the winter of 1981-82 and subsequent debris avalanches severely damaged fish habitat in the Coast Range of Oregon. To prevent debris avalanche and sediment problems to fish habitat we recommend buffers and leave areas be retained where needed along order 1 and 2 streams or on those areas defined by specialists as being important for soil stability.

- 35-2** 2. **Impacts on Water Resources** - Increased water yields (Table 3-5) would increase the ability of streams to transport sediments. This statement fails to address the impacts of where this sediment would be deposited. In all probability this deposition would occur in or along stream orders 3-6 where major fisheries habitat exists.

We propose that you implement our recommendations for buffers along stream orders 1 and 2 to reduce both sediment yield and transport.

- 35-3** 3. **Impacts on Vegetation** - The major impacts as stated will be to reduce the amounts of older seral stages found on BLM lands. Although the chosen alternative is called a seral stage diversity alternative, it needs to fully address the diversity issue. The 4,000 acres of "old growth" to be protected equals only 1% of your land base of 316,747 acres. Within the area defined by the BLM, SMU boundaries (about 1.1 million acres) these 4,000 acres will equal only .36% of the land base.

2. Maintain habitat diversity components.

- a. Protect interspersed non-forest and non-commercial forest habitats and their surrounding ecotones from disturbance by harvest of commercial products, road construction and other activities.
- b. Protect all forested lands withdrawn from the allowable cut base by managing them primarily for wildlife habitat. Limit sales of commercial products and cultural treatments to those that will enhance wildlife habitat.
- c. If the above measures maintain less than 15% of the forest land base in older seral stage forest (stands 120 years+), select additional tracts 50-100 acres for retention at 1-mile intervals within 3-mile wide corridors that connect spotted owl habitats.
- d. Maintain present and future hardwood habitats by retaining at least 10% stocking of all naturally occurring hardwood tree species, and 10% stocking of all naturally occurring "minor" conifer tree species in reforestation areas and "second growth" commercial forest stands. This condition would avoid a monoculture of Douglas fir and would maintain existing vegetative diversity for wildlife.
- e. Maintain at a minimum one accipiter hawk nest site per section in forest stands 30-80 years of age. Such sites to be at least 25 acres in size, unthinned, densely stocked and located on suitable topographic conditions.

3. Protect additional riparian habitat.

- a. Withdraw from timber harvest riparian zones along stream orders 3-6.
- b. Restrict timber harvest in riparian zones along stream orders 1-2. Timber harvest along stream orders 1-2 should be on extended rotation basis (120 years+) and limited to harvest that would benefit wildlife.

4. Additional Big Game considerations.

- a. Implement road closures and forage seeding and maintain escape, thermal and survival cover in amounts and distribution sufficient to develop and maintain elk populations recommended by ODF&W.
- b. Provide a 15 year spatial arrangement for adjacent clearcuts.
- c. Maintain clearcut sizes from 20 to 60 acres.
- d. Herbicides should not be applied to more than 25% of the forage within a one mile radius per year.

5. Maintain the 60% level of cavity nesters on BLM lands.

- a. Mitigate the continuing decline in snag habitat by leaving at least 2 green trees per acre in all timber sale areas following logging and site preparation. Such trees to be at least 20" DBH and 50' tall.
- b. Mitigate the continuing decline of down log habitat by leaving at least 3 logs per acre following logging and site preparation. Such logs to be at least 15" diameter and 25' in length.

Response to comments in Letter 35.

- 35-1 The BLM intends to comply, to the fullest extent practicable, with the Sikes Act of 1974 and the subsequent agreement of May 1975 with the former Oregon Wildlife Commission, now the Oregon Department of Fish and Wildlife (ODFW). Both agencies mutually agreed to ten provisions in the 1975 agreement, which have generally resulted in the satisfactory implementation of the Sikes Act in Oregon.

Although one provision is to provide adequate protection to those species classified by the ODFW as threatened or endangered in Oregon, another states that habitat management plans initiated on BLM lands under the Sikes Act shall not conflict with comprehensive plans developed to fulfill other requirements. The Bureau, therefore, may not be able to provide complete protection to State-listed species in all cases where land use conflicts exist.

- 35-2 The predicted increases in sediment are shown in Table 3-6. These increases are not due to increased water yield. Research shows that there is no increase in winter peak flows, which cause most of sedimentation. The recommendation of leaving buffers along stream orders 1 and 2 where needed is presently practiced as policy in the Eugene District.
- 35-3 The new preferred alternative incorporates six of the seven large block areas of the seral stage distribution system, as a part of a larger system of mid-aged and old-growth habitat designed to preserve some opportunities for genetic interchange. See common issue 4.
- 35-4 Table 3-11 identifies impacts on the hardwood component of District forest lands for each alternative. Alternatives 9 and 10 would maintain hardwood tree species at, or above, their current levels in both the short and long term. Hardwoods will be reduced in varying degrees under all other alternatives.

John L. Timm
473 E Vine
36 Lebanon, Or. 97355
January 24, 1983

Dwight L. Patton, District Manager
Bureau of Land Management
P.O. Box 10226
Eugene, Or. 97440

Dear Mr. Patton:

Reference is made to the Eugene District Timber Management Draft Environmental Impact Statement, December 14, 82. This is a much improved statement over the one presented for the scoping meeting. However, too much emphasis is placed on elk and wild life habitat. The implication through out that timber harvesting is detrimental to elk populations is not based on fact. Examples exist where clearcutting has increased elk in the Millegna area in Lane County and the Klamath area in Lincoln County. In addition elk prospered after the Telumook fires and are already thriving in the St. Helens blast area. More study is needed of elk in the Eugene District starting with a census of existing elk before percentage projections are made.

In spite of suggestions made at the scoping on what the effects of budget constraints on future timber management would be on annual harvests, none have been made.

More information is needed on the nature of the TPCP areas as to timber types and the value of these areas for wild life habitat or other uses. Also, the economics of more expenditures of time and money reforesting the problem non-stocked areas in relation to timber or other uses should be evaluated.

Alternative 3 seems reasonable as it provides time for further study of old growth relationships and provides a cushion against a critical reduction in annual cut if intensive management is not funded.

Sincerely John L. Timm

Response to comments in Letter 36.

- 36-1 See response to comment 11-5 and elk discussion in common issue 2.

- 36-2 See common issue 1.

- 36-3 Timber Production Capability Classification (TPCC) withdrawal areas are defined as all land in the commercial forest land class that is excluded from planned harvest and intensive management for the purpose of timber production. This is due to fragile sites or rehabilitation severities that will not allow sustained yield principles to be met.

These lands are withdrawn from the allowable cut plan and are not a part of any timber management alternative. Wildlife and other values do exist in these locations. These sites are managed for purposes other than timber production. These tracts are not discussed in detail, since this EIS is limited to timber management conflicts with other resource values. Conflict with timber management is precluded on these designated tracts. See response to comment 11-1.

Commercial forest lands "withdrawn" from planned harvest and intensive management total 21,620 acres. The majority of these tracts have never been harvested.

36-1

36-2

36-3

EUGENE DISTRICT MANAGER
BUREAU OF LAND MANAGEMENT
DISTRICT OFFICE
RD. BOX 10226
EUGENE, OREGON 97440

37

DEAR MR. PATTON:

I am writing to present my comments concerning the Eugene Timber Management Draft Environmental Impact Statement. As one who has spent over 50 years in Western Oregon, I have a great concern for the natural resources of this area, as well as the economic base for employment and community stability.

My first comment regarding the DEIS is that the Environmental Consequences of timber harvesting have been greatly over-emphasized. In my experience, timber harvesting that is done with reasonable care as is required by the Oregon Forest Practices Act, has very little, if any adverse effect on the environment. The effect on wildlife is in many cases, beneficial rather than adverse. The statement on page IV regarding "Elk numbers would decline in all alternatives" is not true. On the contrary, I have seen significant increases in the Coast Range elk population following extensive clearcutting of mature or overmature stands.

I am pleased to see a more realistic economic impact analysis than has been done in some previous planning work. The chart on page 69 (Table 3-18) gives a reasonable perspective to some of the total impact on local employment and earnings between the alternatives. This

37-1

Response to comments in Letter 37.

37-1 See response to comment 11-5 and the elk discussion in common issue 2.

Table points out the unreasonably high cost of Alternatives 8, 9 & 10. I favor Alternative 2 or 3 in general, but would support #4 if the preservation of large blocks of mature and old growth timber were eliminated. I feel that too much emphasis has been placed on preserving old growth timber rather than harvesting it and getting the land back into production. I am concerned with the cost-benefit ratio of this preservation, as a price that is too high for the very limited benefits to be derived.

I appreciate the opportunity to comment on this statement. Please place my name on your list for future opportunities for comment.

Sincerely

Norman J Marsh

NORMAN T. MARSH
1893 LEXINGTON CIRCLE S.E.
SALEM, OREGON 97306



38

UNIVERSITY OF OREGON

Mr. D. Patton
District Manager
Eugene District, BLM
Eugene, Oregon 97401

January 19, 1983

Dear Mr. Patton,

First, thank you for giving the public an opportunity to discuss the Eugene Timber Management Draft EIS with you and your staff. I believe that this gave a number of people a chance to clarify specific points and general questions and to better prepare their comments on the EIS. I hope that you will continue this type of dialogue with the public in the future.

The Eugene Timber Management Draft EIS is a well-prepared and visually appealing report. The maps in particular are clear and informative. However, additional maps probably should have been included. Specifically, what would be the spatial effects of each of the ten alternatives? In Alternative 4, the Preferred Alternative, where are the blocks of old-growth forest located, how is their distribution related, and what is the current distribution of old-growth forests in the district? A map would indicate their location, and their spatial relationships to each other. I realize that maps are expensive to make and reproduce, but the information gained by including them justifies their cost. Finally, Figure B-1, the map of Western Oregon Tree Seed Zones is good, but much larger in scale than is necessary. It could be reduced to an 8 1/2 inch by 11 inch format with no loss of information and with some savings in cost.

I agree that the Eugene Timber Management Plan should encourage rather than hinder economic growth in Western Oregon. But I believe that you may have overlooked some potential long-term impacts. Increasing the allowable harvest by 5% may or may not have any short-term impact on our economy. If harvest rates are down, any increases in allowable cut may simply be words on paper. If, however, harvest rates increase, then there will be an increase in the acreage of young seral stands, and accordingly, we will have less old-growth acreage available to us for future uses and harvest. By saving more old-growth today, we will have more management options open to us in the future. The Draft EIS does not properly address the short- and long-term effects of each alternative.

The Draft EIS identifies some of the ecological impacts of each of the ten alternatives. The effects on selected species and habitats show a general decline in the Draft for each alternative. This should be mitigated. A mosaic of habitats (and hence of stand age classes) might be preferential for most plant and animal species. Some species are better adapted to young seral stands, and for some species old-growth stands are necessary. The amount of old-growth in the Preferred Alternative is not enough. Research on the importance of old-growth forests for wildlife habitat is in progress. The USDA, Forest Service in Olympia, Washington, is currently conducting an intensive study on the value of old-growth forests for wildlife. Other research is evaluating the sizes and shapes of old-growth forests necessary for the biological preservation of gene pools and species. Preliminary results indicate that a combination of large and small stands of old-growth may be optimum. While you have chosen such a matrix in your Preferred Alternative, more large and small stands of old-growth are necessary. While we wait for the results of wildlife studies in progress, we should preserve more old-growth. If we discover later that we have maintained more such stands than is needed, we may decide to add some of these stands to the allowable harvest acreage. However, if we harvest these stands

in the near future and later discover that they should have been saved, we may realize too late that we have made an unforgiving and immoral mistake. These habitats may only be regenerated after 150 to 400 years, and while they may be restored to their original condition, we may in the process have lost many valuable game and non-game wildlife species.

Please continue to solicit public response in your decision making process. I believe that this is a good learning experience for both you and the public. Hopefully, responsible persons will continue to become involved in this process.

Respectfully,

Peter D. Teensma
Peter D. Teensma
Doctoral Candidate
Department of Geography
University of Oregon



January 24, 1983

Mr. Dwight Patton
U.S.D.I. - BLM
P.O. Box 10226
Eugene, OR 97440

Dear Mr. Patton:

On behalf of National Wildlife Federation and Oregon Wildlife Federation, the following comments are submitted for your consideration regarding the Timber Management Plan, Draft Environmental Impact Statement. The DEIS generally does a good job of describing the environmental effects of the alternatives. However, the preferred alternative (PA) appears to violate major federal statutes and certain BLM policies. In addition, recent Department of Interior policies concerning the management of O & C lands appear illegal.

Preferred Alternative Violates Sustained Yield Principles

The PA proposes the annual sale of 230 million board feet. BLM policy requires that the sale of timber adhere to the policy of non-declining yield. See, Instruction Memorandum 79-529. For the following reasons, the Eugene District likely cannot maintain the sale of 230 million board feet on a non-declining yield basis over the long-term, as required by Bureau policy.

39-1

I. Increases in yield from genetic improvement and precommercial thinning programs are ill-conceived.

BLM uses the D-FIT computer program to calculate the future growth and volume of the forest. D-FIT, in turn relies on the publication "The Yield of Douglas Fir in the Pacific Northwest," or Bulletin 201, as it is commonly known, for its basic data.

Bulletin 201 is based on stands that were well-stocked and utilizing the available site productivity to its fullest. It is improper, therefore, to expect that practices which encourage individual tree growth will yield more wood at rotation age. In other words, the site productivity is the limiting factor, not inherent tree growth. See, Silen, Roy, "Nitrogen, Corn and Forest Genetics," PNW-137.

BLM appears to anticipate increased growth rate due to precommercial thinning and genetic improvement. Neither of these

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page two

practices increase the productivity of the land. Therefore, neither practice can be anticipated to increase stand growth over that reported for normal stands in Bulletin 201.

A substantial portion of the improperly predicted future growth increases is to be harvested in the next decade. This so-called "allowable cut effect" violates sustained-yield principles. BLM proposes to sell more today than can be sustained on a non-declining yield basis because the expected increases in growth due to individual tree improvement practices are not likely to occur.

39-2

II. BLM proposes a sale program of 230 million board feet which cannot be maintained beyond the first decade.

BLM proposes to sell 230 million board feet of timber under non-declining yield policies. BLM failed to test whether 230 million board feet can be maintained throughout the 40-decade projection period. In fact, there is persuasive evidence that BLM cannot sustain an annual sale of 230 million board feet even beyond the first decade, much less the entire 40-decade period.

The 230 million board feet sale program is based on results from the SIMEX program and the average sized tree planned for sale in the first decade. SIMEX calculated the maximum sale level in cubic foot measure which could be sustained for 40 decades, while allowing trees as young as 40 years to be harvested in the future.

BLM then converted this cubic foot sale level to board feet based on the average-sized tree expected for sale in the first decade. Since BLM anticipates selling large, old-growth trees in the first decade, the conversion factor used was relatively large; about 6.0 board feet per cubic foot. The result is a sale program of 230 million board feet.

But, in the future BLM will not be selling large, old-growth trees. Admittedly, they will be selling trees as young as 40 years. A 40-year old tree has a board feet per cubic foot ratio of 3.0, or half that of a mature tree. Therefore, BLM will be selling about 165 million board feet in the future, or half of the first decade's sales. This violates the sustained-yield principle of non-declining yield, as established by BLM policy.

III. BLM has apparently not accounted for predicted reductions in timber productivity when calculating the allowable cut.

Table 2-3 predicts a total loss of productivity on 4,250 acre-equivalents during the first decade due to roads, compaction, and erosion. This amount is apparently conservative as it fails to account for losses due to dry ravelling and nutrient depletion.

39-3

Assuming that road construction will be completed within the first decade, the long-term loss of soil productivity over 40 decades would be approximately 91,000 acre-equivalents. There is no evidence that BLM accounted for these reductions in productivity in computing the allowable cut. The allowable cut is therefore over-stated and cannot be maintained, violating the sustained-yield principle of non-declining yield.

BLM's proposal to reduce the productivity of the land is also an apparent violation of § 102 of FLMPA which requires that "management be on the basis of multiple use" and § 103 which defines multiple use to be management "... without permanent impairment of the productivity of the land ...". These provisions pose no conflict with provisions of the O & C Act.

BLM Preferred Alternative Apparently Violates The Church Clear-Cutting Guidelines

BLM has adopted the guidelines contained in the Church Report as Bureau policy to guide timber harvesting and related activities. BLM's Preferred Alternative apparently violates numerous Church Report guidelines.

I. The Preferred Alternative apparently violates the provision that "allowable harvests based on intensified management practices such as reforestation, thinning, tree improvement and the like should be made only upon demonstration that such practices justify increased allowable harvests, and there is assurance that such practices are satisfactorily funded"

As previously discussed, BLM's yield assumptions concerning genetic improvement and precommercial thinning are not justified, nor are they proper. It is likely that BLM will not receive sufficient funding to perform the anticipated intensive management practices planned for the future. BLM will be selling less valuable second-growth trees, and plans to perform many times the historical level of precommercial thinning, genetic improvement and fertilization. The DEIS offers no analysis beyond the statement: "A basic assumption of the analysis is that sufficient funding and personnel will be available for implementation of the final decision." See, DEIS at 46. A "basic assumption" hardly provides any assurance of satisfactory finding.

39-4

II. The Preferred Alternative apparently violates the provision that "[c]learcutting should not be used as a cutting method on Federal land areas where: a. Soil, slope or other watershed conditions are fragile and subject to major injury."

The DEIS contains a generally good discussion of the effects of clearcutting on some of the fragile soils in the Eugene District. The DEIS states that "[s]oils such as Bohannon, Preacher, Digger or Jason can be expected to landslide when harvested of trees on steep slopes, or when roads are constructed across them." The DEIS notes: "Most failures can be expected at or near headwalls; however, the district will continue to attempt leaving trees and vegetation at headwall areas in unstable terrain . . ."

The DEIS also establishes that major injury to streams will occur in the event of landslides: "Material from debris avalanches usually scour stream channels to bedrock, ending in debris dams." This damage causes loss of fish habitat and water quality. See, Siuslaw Ten-Year Timber Resource Plan.

39-5 The reliance of BLM on leaving trees in headwall areas, so-called "leave areas," is insufficient to prevent major injury to streams. The Forest Service has calculated that leave areas fail to prevent accelerated landsliding about half the time. See, Memorandum by George Bush, June 9, 1982. Therefore, leave areas fail to prevent major injury to streams in areas of unstable, fragile soils. See, Attachment by Stahl, "Summary Report on Investigation of Soil Stability Landslides, and Timber Harvesting: Mapleton Ranger District, Siuslaw National Forest."

III. Preferred Alternative has failed to determine that clearcutting "is silviculturally essential to accomplish the relevant forest management objectives."

The Preferred Alternative proposes that 41,273 acres be clearcut in the first decade alone. The DEIS offers no rationale or finding that clearcutting is essential, nor any discussion of clearcutting and its effects on the environment. Nor is there any consideration given to other silvicultural systems.

Effects on Wildlife of the Preferred Alternative Are Unacceptable to the National Wildlife Federation and Oregon Wildlife Federation

BLM proposes to manage wildlife as a residual resource; whatever forests are left over after the maximum amount of timber is cut can be managed for wildlife. This is an unacceptable abrogation of BLM's legal mandate to conserve, protect, and enhance wildlife populations.

By reference, we incorporate our comments on the South Coast-Curry Environmental Impact Statement (October 15, 1980).

We appreciate this opportunity to review the DEIS.

Sincerely,

Andy Stahl

Andy Stahl
Consulting Forester

AS/bas

enclosure

cc: Dave Doran
Fred Koehler
Bill Leavell
Honorable Jim Weaver
Sidney Herbert

Response to comments in Letter 39.

39-1 The BLM has a tree improvement plan developed specifically for western Oregon. This plan has been prepared using the best empirical data and genetic theory available to date. The Eugene District participates fully in this plan.

The BLM will increase volume on its lands through the use of genetic tree improvement by producing merchantable trees in a shorter time period than would occur without this practice. This is achieved, not by increasing site productivity, but by selecting individual trees, through progeny testing, which produce more volume than the comparison trees in the same time period. Seedlings can be grown from these select trees which will produce higher volume than the normal stand, given the same time period.

The precommercial thinning program will increase volume yield by redistributing the size classes which make up the stand and thereby concentrating growth on fewer stems. By cutting the suppressed trees, the dominant trees are allowed to express their full potential for growth. By eliminating competition between trees, maximum site productivity is achieved in the shortest time period possible.

39-2 The allowable cut is modeled in cubic feet for 40 decades. It is sustainable.

39-3 Table 2-3 indicates non-point water quality problems of certain major streams and rivers. Table 3-2, however, is probably the one to which reference was intended.

This table identifies acreage lost to timber production during the first decade due to road construction. This acreage, as well as second decade construction necessary to complete the needed road system, has been excluded from the commercial forest lands available to planned harvest and intensive management, and thus has not been considered in allowable cut calculations.

Inventories completed in 1978 provide a measurement of impact to sites from previous harvest operations. This impact is projected and accountable in the reduction from normality of the Stand Density Index, as referenced in USFS Bulletin 201. For the two sustained yield units making up the Eugene District 84.6 and 80.3 percent of normal stand density is projected. Operational restrictions are provided to control locations of landings and yarding roads within these density indexing limits.

39-4 The intensive management practices proposed in the various alternatives will increase future merchantable volume and therefore have an effect on the allowable cut. If BLM does not receive the funding that is necessary to implement the selected intensive practices, then adjustments would have to be made in the annual level of harvest. These adjustments would be made anytime that significant changes occur in the intensity of management.

39-5 BLM has accounted for some reductions on the basis of land allocation. Regarding expected productivity losses from landslides, the Eugene District has set aside approximately 7500 acres that are to be removed from the allowable harvest base when they are identified as potential landslide sites. The method of potential landslide identification is more sophisticated than those cited as standard restrictions on the Mapleton Ranger District. The BLM system involves a site-specific identification of all potential landslides as proposed timber sales are reviewed.



United States
Department of
Agriculture

Soil
Conservation
Service

1220 S. W. Third Avenue
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Portland, Oregon 97204

40

January 25, 1983

Bureau of Land Management
District Office
P. O. Box 10226
Eugene, Oregon 97440

We have reviewed the Draft EIS for the Eugene Timber Management plan,
and have no comment. Thank you for the opportunity to respond.

Jack P. Kanalz
JACK P. KANALZ
State Conservationist

Attachment

LANE REGIONAL

AIR POLLUTION AUTHORITY



(503) 686-7618
1244 Walnut Street, Eugene, Oregon 97403

41

Donald R. Aikell, Director

January 21, 1983

Mr. Dwight Patton
District Manager
Bureau of Land Management
P. O. Box 10226
Eugene, OR 97440

Dear Mr. Patton:

We appreciate the opportunity to review the draft EIS of the BLM "Ten-year Timber Management Plan" for the Eugene Sustained Yield Units. We have a few comments regarding the air quality discussions.

41-1 In Table 2-1 on Page 18, it should be noted that the "winter" months also have a very high air pollution potential. In fact, from October through early February is when most Air Stagnation Advisories are issued. It is also during this period when we see most of the 24-hour standard violations for Total Significant Particulate and all of the 8-hour standard violations for carbon monoxide in the Eugene-Springfield AQMA.

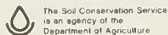
41-2 On Pages 46 and 47, it is noted that visible smoke will be the major impact to air quality from slash burning. It should also be noted that the EPA is scheduled to promulgate new fine particulate standards within the next year and that due to the small aerodynamic size of particulate emissions from slash burning, slash smoke may contribute, at times, to exceedences of the new standard. In addition, we think that smoke from the Eugene SFU's will, on occasion, impact the Class I Wilderness Areas. The narrative on Page 46 implies this, but the conclusions on Page 47 state that it would not be likely.

If you have any questions regarding these comments or need further information, please call me at 686-7618.

Sincerely,

Ralph E. Johnston
Technical Services Supervisor

REJ/ceh



The Soil Conservation Service
is an agency of the
Department of Agriculture

Clean Air Is a Natural Resource - Help Preserve It

Response to comments in Letter 41.

41-1 Table 2-1 has been changed to note that lower layer stagnation is persistent and that November to February have a high potential for air pollution. The table also now shows that mixing between air layers is occasionally present and very high air pollution potential exists during this period.

41-2 The Conclusions section of Impacts on Air Quality, Chapter 3, has been changed to acknowledge occasional visibility intrusions in Class 1 wilderness areas.



ASSOCIATED OREGON LOGGERS, INC.

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42

F. F. Monte Montgomery
President

January 24, 1983

Dwight Patton
District Manager
Bureau of Land Management
PO Box 10226
Eugene, OR 97440

Dear Mr. Patton:

Associated Oregon Loggers has reviewed the Eugene District Timber Management Draft Environmental Impact Statement (EIS). The attached review outlines AOL's comments on the adequacy of the EIS.

Several improvements are necessary to bring the EIS into compliance with NEPA, and the BLM planning regulations. And in a number of cases, more information must be provided in the EIS in order to fully understand the effects of each alternative.

Incorporation of AOL's recommendations into the final EIS should help improve the adequacy of the document.

We appreciate this opportunity to offer constructive recommendations through the public participation process.

Sincerely,

Sue Joeger
Sue Joeger
Forest Planner

SJ/mkr
Enclosures

cc: Executive Committee
Chapter Chairmen
District Representatives
Ray Doerner

AOL REVIEW OF THE
ADEQUACY OF THE BLM
EUGENE DISTRICT DRAFT
TIMBER MANAGEMENT
ENVIRONMENTAL IMPACT STATEMENT

The draft EIS for the Eugene District has a number of inadequacies which can be quickly remedied. AOL recommends a number of actions which could improve the compliance with NEPA, and the planning regulations. Additional information is needed in a number of places to answer key questions.

Impact Assessment

The EIS presents a biased analysis of the impact of old growth retention for wildlife on community stability in the EIS. The wildlife and fish sections on pages 55-64 describe the environmental consequences of each alternative. The impacts cited focus only on the negative effects of timber operations on animals and their habitats. Collision mortality, harassment, and displacement are used to describe these impacts. All alternatives (except 9 and 10) have adverse impacts on wildlife from road construction, timber harvest, skidding and yarding, clear-cut size, slash burning, mechanical piling, exposure to toxic chemicals, precommercial thinning and commercial thinning.

In contrast, the impacts on socioeconomic conditions are described on pages 69-73. The phrase adverse impact does not occur once, even though alternatives 7 through 10 have an adverse impact on jobs, payrolls, and public revenue. The EIS also separates the work force into older and younger members, claiming the impact is less on younger members. This breakdown is artificial. Furthermore, the subjective analysis that alternatives effecting only a small number of people in a community is not important, is a serious misstatement and analysis of the issue. Whether it is a 2.7% or 13.2% decrease in jobs, the impact to those individuals and their families is significant and adverse.

The EIS, as it is written, is biased. It goes to great lengths to analyze the impacts of every forest management activity on fish and wildlife populations and habitats, claiming that each activity has a significant adverse effect, yet, the impact of wildlife management on jobs, public revenue, and payrolls is not specifically cited. The judgement is made that decreases in jobs are not significant or adverse at certain level, yet, any and all changes at any level in fish and wildlife habitat and populations are considered adverse and significant.

The BLM is favoring one resource use over the other by failing to be objective and apply the same standards of impact analysis to all resource uses on the District.

Page 3

Compliance with NEPA

Should the EIS, in order to comply with NEPA, analyze the impacts of a range of seral stage distribution alternatives rather than one seral stage alternative?

By limiting the range of feasible alternatives to one, it is very likely that the BLM Eugene District EIS is not adequate in its presentation of a range of alternatives.

*AOL raises this concern for your review and analysis. Resolution of this question is essential prior to the release of the final EIS.

COMPLIANCE WITH PLANNING REGULATIONS

Use of Planning Criteria (Section 1601.5-2)

In January 1981, the Eugene District issued planning criteria and a summary of public issues to be addressed by the planning process. Section 1601.5-2 (a) of the regulations state that

Planning criteria shall be written and included in the draft and final plan. Planning criteria shall guide the.....design and formulation of alternatives, and the effects of alternatives. Planning criteria shall be used to evaluate alternatives and to select one alternative to serve as the proposed resource management plan.

The draft EIS includes no discussion of planning criteria, nor public issues. There is no evidence that planning criteria were used to formulate alternatives or to evaluate them to select the new proposed alternative. (Appendix C, page 88 lists criteria for selecting only the original proposed action.)

*AOL recommends that the final EIS include a discussion of how planning criteria were used to evaluate and select the new proposed alternative.

Analysis of the Management Situation (Section 1601.5-4)

The purpose of the analysis of the management situation process is to "determine the capability of the public land resources to respond to: needs, concerns and opportunities identified through public participation...."

Factors to be included in this analysis are national and State Director goals and objectives, and economically viable (using benefit cost or cost effectiveness standards) estimates of sustainable levels of the various goods, services and uses. Other factors include the degree of local dependence on public resources, opportunities to resolve public issues, and critical threshold levels.

Page 2

*AOL recommends that the wording in the economic and social impact section be treated in both the same manner and using similar criteria as the fish and wildlife analysis. The distortion of impacts arbitrarily discriminates against people in local communities.

Editorializing

The last two paragraphs of the "conclusions" section (page 64) of the "Impact on Animals" section should be removed from the EIS since it strays from the objective reporting of impacts. The purpose of an EIS is to assess the impacts of a range of alternatives on a specific area. It is not appropriate for the EIS to discuss the cumulative impacts of several BLM plans; this would be more appropriate as a state office function in a separate analysis.

Furthermore, the statement that:

The population in the Cascades would not be greatly affected due to the large amount of Forest Service lands available; however, a larger burden for the protection of the spotted owl in the Cascades would be shifted to that agency,

is an issue that is not an appropriate subject for the EIS. This statement could mislead the public into believing that the Forest Service can readily protect the owls. The assumption is also made that the burden for protecting spotted owls would be shifted to only the Forest Service and not other members of the Task Force.

*AOL recommends that these two paragraphs be removed from the EIS because of their subjective and misleading nature.

Seral Stage Distribution

The BLM has removed 3,987 old growth acres from the timber production base. The July 15, 1982 Burford letter emphasizes that withdrawal of commercial forest land from the allowable cut base will occur only if it is "found necessary to protect future options". It further states that if it is found necessary, only the "minimum incremental allocation" will be made.

42-2 The EIS does not address the necessity of its allocation nor evidence that it is a minimal allocation.

*AOL recommends that evidence of necessity and the minimum incremental analysis be included in the final EIS.

Page 4

42-3 There is no evidence in the EIS that an analysis of the management situation, as defined in the regulations, has occurred.

*AOL recommends that the final EIS be expanded to include an analysis of the management situation.

Estimation of Effects of Alternatives (Section 1601.5-6)

Many of the assumptions used to justify the seral stage distribution concept, the old growth corridor concept and the 1,000 acre habitat standard for spotted owls, are based upon limited research data. Yet, the limits of this data are not clearly articulated in the EIS.

For example, in the second and third paragraphs found on page 28, the block and corridor concept and the 15% older seral stage requirement are cited both without reference and without a discussion of the limitations of knowledge on these subjects. Other examples occur on pages 55-56.

Section 1601.5-6 of the regulations which deals with the estimation of the effects of implementing each alternative states that, "the documentation shall include an indication of the reliability of the data and estimates involved."

*AOL recommends that wildlife sections of the EIS be revised to include a discussion of the limits and reliability of some of the key assumptions.

Monitoring and Evaluation (Section 1601.5-9)

The EIS lists several programs which are routinely monitored such as forest practices, timber sale contracts, silvicultural treatments, and water quality. Other programs, as is stated in the EIS, will be monitored as outlined in the forthcoming Record of Decision.

The planning regulations appear to require more than status quo monitoring.

The District Manager shall establish intervals of not more than five years and standards for monitoring and evaluating the plans. Such intervals and standards shall be based on the sensitivity of the resource to the decisions involved and shall provide for evaluation to determine whether mitigation measures are satisfactory, whether any established threshold levels have been met or exceeded, whether there has been significant change in the related plans of other Federal agencies, state or local governments or Indian tribes, or whether there is new data significant to the plan.

*AOL recommends that the BLM develop a monitoring program as specifically required in the planning regulations.

Page 5

The Amended Endangered Species Act

The impact of the proposed action on threatened and endangered species is described on pages 61-63. The paragraphs lead one to believe that bald eagles will be adversely impacted if alternatives 1-6 are selected.

AOL is under the impression that the BLM is required preserve bald eagles with no adverse impacts to their habitat in accordance with the Endangered Species Act.

- 42-4 *AOL requests that the BLM clarify their responsibility for the protection of bald eagles, under the Endangered Species Act and Pacific Bald Eagle Recovery Plan. Adverse long run impacts do not appear consistent with these programs.

NEW INFORMATION NEEDED

There are a number of items in the EIS which need further clarification and information. AOL recommends that the answers to the following questions be included in the final EIS where appropriate.

- 42-5 1) How will the 57,600 acres in riparian zones be managed? Will selective harvesting be permitted?
- 42-6 2) Commercial thinning is decreased from the current 46,800 acres to 12,877 acres in the proposed alternative for the first decade. Why is this reduction so great? How many acres are allocated to commercial thinning in future decades in the proposed action? (On page 57 commercial thinning is said to increase, but no figures are given.)
- 42-7 3) How much allowable cut "credit" has been taken for genetics and fertilization? Are these practices and credit assumed for each decade of the planning horizon?
- 42-8 4) What is the long run sustained yield of the District?
- 42-9 5) What are the budget requirements for each of the alternatives?
- 42-10 6) What is the potential impact of reduced budgets on the allowable cut for the District? It appears that with an allowable cut credit of 26%, failure to receive full funding could dramatically effect the District's management program.

Response to comments in Letter 42.

- 42-1 An analysis of the opportunity costs of each land allocation is presented in common issue 3.
- 42-2 See common issue 4.
- 42-3 While not entitled as such, an analysis of the management situation is contained in the District's Unit Resource Analysis and the Planning Area Analysis, referenced in the EIS and available for review at the Eugene District Office.
- Application of all planning regulations described in 43 CFR 1600 to the Eugene District MFP is not appropriate. As section 1601.8 describes, those Management Framework Plans underway at the time these regulations were issued would be reviewed by the Director and a schedule of compliance published. This review, published in the Federal Register, December 3, 1979 (Vol. 44, No. 233), detailed which portions of the regulations applied to MFPs in progress.
- 42-4 See response to comment 21-20.
- 42-5 In the preferred alternative, no timber harvest would normally be scheduled in riparian zones adjacent to third order and above streams. Riparian zones in first and second order streams would remain in the intensive timber management base, but managers may require mitigating measures including no harvest if required to meet established standards for downstream water quality. A discussion of design features that may be applied to first and second order streams has been added to Impacts on Water Resources, Chapter 3.
- 42-6 Commercially thinned acres during the present decade are limited to an initial entry in "wild" stands aged 40 - 70. These entries are limited by topography, stand densities and diameter sizes. In second and succeeding decades, the 40- and 50- year old stands are entered a second time. All age 30 and 40 managed stands, including those previously precommercially thinned, are entered commercially for the first time. The commercial thinning program increases to approximately 50,000 acres in the second and succeeding decades in order to include treatment of 90 percent of the managed stands resulting from harvest 30-40 years previously which meet controlled spacing requirements.
- The no action alternative proposes entry in all wild stands on a land base approximately 23,000 acres greater in size than the preferred alternative. Entries are made in stands of lower stem density or basal area, a less cost effective approach than the more selective approach of the preferred alternative.
- 42-7 See common issue 1.

Page 6

- 42-11 7) How can the following inconsistencies be explained in the EIS, to avoid public confusion?
- a) On page 25, the table indicates that the BLM manages 8% of the mature and old growth timber in the Eugene area.
- b) On page 28, the statement is made that the BLM is the "sole provider of habitat for old growth dependent species."
- c) And, on page 29, with reference to old growth thermal cover "it is primarily Bureau managed lands that supply the survival component."

42-8 The long run sustained yield of the SYUs is 69 million cubic feet.

42-9 See common issue 1.

42-10 See common issue 1.

42-11 The statements apply to two different areas. Table 2-4 refers to all lands in Lane County and the lower third of Linn County, as the accompanying text explains. The statement you cited on page 28 of the DEIS refers to BLM lands in the Eugene SYUs, as shown on the vicinity map preceding the Summary at the beginning of the EIS. (Note that Table 2-7 was incorrectly titled in the DEIS and has been revised. See response to comment 11-2.) Lands adjacent to BLM-administered lands within the SYUs have few forest types in the 120-year-and-older age classes--those which supply survival cover.



DOUGLAS TIMBER OPERATORS, INC.

43

January 24, 1983

Mr. Dwight Patton, District Manager
Bureau of Land Management
P.O. Box 10226
Eugene, OR 97440

Dear Mr. Patton:

The following comments pertaining to the adequacy of the Eugene Timber Management Draft Environmental Impact Statement are submitted on behalf of Douglas Timber Operators. DTO represents the complete realm of the timber industry, from large forest product manufacturers to independent loggers and retailers. Over 12,000 workers in Lane, Douglas and Coos Counties are normally employed by our members. DTO members all have a substantial dependence on public timber supplies, therefore, our interest in planning for the future management of local forest lands is acute.

DTO applauds the efforts by the Eugene District to choose a preferred alternative which plans a 5% increase in timber production from O and C lands. We feel the BLM's new direction is a better attempt at carrying out the State and National Office's Management Criteria.

DTO's comments concern four aspects of the Draft Environmental Impact Statement: Environmental Consequences, Economic Analysis, Community Stability and Seral Stage Distribution.

ENVIRONMENTAL CONSEQUENCES

Although much improved over other Western Oregon districts, the Eugene District's DEIS is still lacking in some areas of critical analysis. It is interesting to note that while fish and wildlife require over 9 pages of analysis of environmental consequences (Chapter 3, pages SS-64), impacts on economic conditions is allocated a little over 4 pages (Chapter 3, pages 69-73). It seems this simple comparison is a microcosm of the whole DEIS. Much emphasis is placed on the impacts (mostly negative) of the timber management plan on fish and wildlife habitats and populations whereas the impact or influence the DEIS has on social conditions is minimized.

Suite 222, Pacific Building • 727 S.E. Cass Avenue • Roseburg, Oregon 97470 • (503) 672-0757

-3-

ECONOMIC ANALYSIS

The economic analysis of the DEIS is a good attempt at displaying the affects on certain aspects of the economy of the timber management plan. However, it falls short in relation to explicitly showing the costs and values of the various alternatives. The DEIS should display the opportunity costs of the withdrawn lands, environmental restrictions on management activities and those related to postponing harvest of over-mature timber.

DTO is also very concerned with the statement in the DEIS relating to LCDC goals (page 15) where it is inferred that an increase in harvest level would "diminish opportunities" for economic diversity and decreasing harvest would "provide diversity." This reasoning is contrary to common understanding of economic conditions. An increase in activity of the forest products industry does not reduce diversification potential. On the contrary, the forest products industry provides a great bulk of the much needed revenue for capital improvements (water, roads, schools, electricity) for local communities. With these basic facilities in place at relatively low costs to incoming business, economic diversity can be enhanced. Whereas, reducing the output of the forest products industry decreases capital improvements in a community and puts more of the burden of providing these essential services on the incoming diverse businesses.

A key element of the economic section which is missing is an analysis of the relationship of the output levels of the alternatives to various levels of funding. It appears the DEIS assumes full funding for all of the planned activities. In this day and age of budgetary cutbacks, that does not seem to be a realistic approach. The FEIS should examine the effects of funding shortfalls on proposed harvest levels.

COMMUNITY STABILITY

DTO was very surprised to read in the DEIS that community stability may be affected if the "BLM's timber management program: Leads to attitudes or opinions that increase interpersonal conflict or divisiveness within a community" (page 72). Realistically, interpersonal conflict and divisiveness would not influence community stability. The Eugene District DEIS is unique in identifying attitudes or opinions as being a factor in community stability. This was not identified as an issue at the EIS scoping meeting.

SERAL STAGE DISTRIBUTION

DTO feels that the additional withdrawal from intensive forest management for the Seral Stage Distribution program is not warranted. The scientific justification for Seral Stage Distribution is very shallow. Attached are two letters concerning the scientific background of Seral Stage

-2-

For example, in the conclusion of impacts on fish and wildlife (page 63), it is stated that changes "in habitat diversity and reduction of old-growth would have an adverse impact to wildlife in general and old-growth species in particular." On the other hand, the affects on employment of the Timber Management Plan seemed to be minimized or down-played: On page 72 the BLM gives the impression that 60 jobs are insignificant when it states, "significant social impacts would not be expected because that number is barely one percent of the timber processing work force." Analytically, the BLM is most likely correct in choosing to examine the social and economic impacts of the alternatives in the context of the whole community not just the portions affected by the Eugene District. However, isn't it just as valid to examine the impacts on fish and wildlife in context of the BLM being only one manager in the area without exclusive control over other ownerships? It is essential that the environmental impacts be portrayed in relation to the entire forest community - not just the BLM lands. A comprehensive analysis of this type would be of immense value to the reviewers of the DEIS or FEIS. It may show that population and habitat declines although significant on BLM land, may be less drastic or reversed for all forest lands.

Another major difference in the analyses for fish and wildlife and economic concerns is the confidence placed in the impact projections. From reviewing the DEIS one is lead to believe that wildlife biology is an exact science and that it is just as valid to project populations of certain species on BLM land for the next ten years as it is to forecast the impacts of various harvest levels on revenue and employment.

Wildlife biology and discerning the affects of timber management activities on population levels is a relatively new and unexplored field. Doomsday projections regarding the demise or decline of certain species or habitats should be tempered with a disclaimer allowing that such predictions are as yet untested opinions.

The BLM has most likely anticipated that its gloomy analysis of the impacts on fish and wildlife will bring forth tremendous public outcry urging shifts from more timber management to more wildlife protection. In this respect, the DEIS has done injustice to the forest management community. Nowhere in the document is there any mention of possible mitigating activities which can reduce the predicted adverse impacts or most probably, enhance the population levels of critical fish and wildlife species. Why doesn't the BLM take an active role in fish and wildlife management and not just rely on habitat preservation? In the same light, the BLM could have staved off much of the anticipated concern over the purported neglect of fish and wildlife by examining the habitat potential and enhancement opportunities of the withdrawn lands. The FEIS should portray the BLM's management criteria and timber management plan from a more objective view. The BLM should not be a passive caretaker of the land.

43-1

-4-

Distribution as applied on the Coos Bay District. They apply to the Eugene District also. The major driving force behind the Seral Stage Distribution concept is the complex interactions between the plant and animals over time. The two examples of these are nitrogen fixation and mycorrhizal inoculation. If it is determined that nitrogen fixation and mycorrhizal inoculation are essential to maintain the productivity of the forest, there is no reason to believe that these features cannot be introduced from existing old growth stands on the Eugene District or from intensive management practice. Fertilization and artificial mycorrhizal inoculation are two legitimate forest management tools that are applied frequently throughout the Pacific Northwest. Other aspects of these "complex interactions" of old growth ecosystems have even less substantial cause for additional land withdrawals. Requiring distribution of the old growth blocks in each Douglas-fir seed zone and 500 foot elevation band is totally without scientific backing. Although the genetics of Douglas-fir trees may vary slightly between these zones, the genetic variance between the plants and animals which create the "complex interactions" in these zones is definitely insignificant.

SUMMARY

It appears to DTO that the DEIS was not objective in its analysis of environmental consequences of fish and wildlife and social concerns. The document gives one the feeling that timber management precludes environmental protection. The relative costs and values associated with timber management and habitat preservation and management need to be displayed. Discussions of community stability should be confined to relevant factors - not attitudes or opinions. The BLM needs to examine the application of the goals of Seral Stage Distribution to old growth withdrawn for other land management purposes.

DTO appreciates the opportunity to comment on such an important issue. We hope our comments are received as constructive criticism. They are intended to aid in developing a comprehensive Final Environmental Impact Statement.

Respectfully,

Ralph Saperstein
Ralph Saperstein
Executive Director

RS:gb

cc: Senator Mark Hatfield
Senator Bob Packwood
Representative Jim Weaver
Robert Burford
Bill Leavell

43-2

43-3

43-4

43-5

Response to comments in Letter 43.

- 43-1 See common issue 2.
 43-2 See common issue 3.
 43-3 See common issue 1.
 43-4 See text revisions, Impacts on Social Conditions, Chapter 3.
 43-5 See common issue 4.

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January 24, 1983

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Mr. Dwight Patton
 District Manager
 Bureau of Land Management
 P. D. Box 10226
 Eugene, OR 97440

Re: Eugene District Timber Management Draft Environmental Impact Statement

Dear Mr. Patton:

The Association of O & C Counties (ADCC), the 18 Oregon counties in which the OMC lands are located, are pleased to comment on the Eugene District Timber Draft Environmental Impact Statement (DEIS). Although the following listed concerns deal with the adequacy of the DEIS, we are pleased to say that the Preferred Alternative (PA) appears to be a reasonable candidate for consideration as the Final Decision.

Legal -

- 44-1** We are pleased to note the recognition of the dominate timber production mandate of the O & C Act. However, The DEIS treats the few acres of Public Domain lands as though they are O & C. We believe that the PA is also compatible with multiple use mandates of FLPMA, in so far as these minor acreages are concerned, but the EIS should explain this. What conflicts, if any, exist.

- 44-2** There is no explanation or discussion of the Sykes Act agreement of 1975 between the BLM and the State of Oregon Fish and Wildlife Department. Again, we believe that the PA is in compliance but the Draft does not confirm this.

Forest Management -

The PA appears to reasonably employ those intensive management practices considered to be prudent and cost effective at this time. The Association observes, however, that fertilization is apparently restricted to those stands that have or will be thinned. A cursory professional review employed by this Association, revealed that in the Coos District there were numerous stands of natural unthinned stands that would also benefit from fertilization. Similar opportunities may well be available in the Eugene District. Table C-1 indicates that over 170 thousand acres are in the 10 yr. to 60 yr. age class - far more than proposed for treatment in the PA or any other alternative. We recommend that the Eugene District BLM inventory and research this possibility.

Mr. Dwight Patton
 January 24, 1983
 Page 2

Of the 10 alternatives in the DEIS, there are 8 different land allocation schemes with differing mixes of intensive management. The public and the decision maker would be greatly assisted if the EIS would show just what the board foot output would be from each scheme without intensive management, and then, what each intensive practice adds to the base output.

Forest Economics -

As in other District DEIS's, costs of the various alternatives are non-existent as are the individual intensive management practices. Each alternative appears to be based upon full funding - not a likely happening. No doubt each intensive practice is cost effective or it would not be included in any of the alternatives, but the question is-- how effective. Certainly some are more cost effective than others. It is absolutely essential that the public and the decision maker have such data available in order to select or develop a final plan that is the most cost effective over all, and that retains the greatest flexibility toward fluctuating appropriations.

Wildlife -

The DEIS states that under their Preferred Alternative, wildlife consideration would be provided when consistent with intensive timber production. The reader could easily get the impression that wildlife habitat management is limited to the intensive timber base. The EIS should do a better job of explaining how the various wildlife considerations apply to the total lands available, including 44,556 acres of "no planned harvest". Also the benefits of timber harvesting need to be put forth for wildlife. Adverse impacts seem to get priority in the DEIS.

- 44-3** The relativity of future impacts in one alternative appear to be inconsistent with those in another. For example- when comparing Alt. 4 (the Preferred Alt.) and Alt. 7 (the Original Proposed Action) with tables 3-10 (acres of remaining old growth) and 3-14 (remaining spotted owls), we find that at the end of the 10th decade only 1 pair of owls will remain on Alt. 4's 16,400 old growth acres. But Alt. 7, with its 22,300 acres of old growth is blessed with 19 pairs?? Also note that the relationship of old growth acreages between Alt. 4 and Alt. 7 are very consistent throughout the first nine decades. Perhaps there are some biologic explanations for this unusual arithmetic but the DEIS is not convincing.

Seral Stage -

The purported purpose of the Seral Stage withdrawals is that of time (10 yrs.) for research. The research is to determine whether or not the retention of some old growth ecosystems might aid in future productivity from the lands. It appears that the BLM staff have commendably selected Seral Stage withdrawal plots that best double for the needs of wildlife. But the fact that even under Alt. 1 (max. timber harvest), there would still be over 26,000 acres of old growth remaining at the end of the decade, one can question the need for any Seral Stage withdrawal at all unless the true underlying motive is that of wildlife habitat. If such is the case, the proposed withdrawals should be so labeled and justified.

Mr. Dwight Patton
 January 24, 1983
 Page 3

Summary -

We believe that the DEIS is adequate in scope from which a decision can be made but production and cost data is lacking. Many assumptions, especially those dealing with wildlife needs and seral stage, are subjective and lack documentation and authenticity.

The Association members recognize the tremendous effort that has gone into the preparation of the DEIS. We trust that you will accept these critical comments in the constructive light that they are intended.

Sincerely,
 Ray E. Doerner, Exec Dir.

Response to comments in Letter 44.

44-1 See response to comment 3-1.

44-2 See response to comment 35-1.

44-3 See spotted owl discussion in common issue 2.

44-4 See common issue 4.



INTERNATIONAL PAPER COMPANY

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45

PHONE (503) 243-2211

January 21, 1983

Bureau of Land Management
District Office
P.O. Box 10226
Eugene, Oregon 97440

Gentlemen:

We have been reviewing the Draft Timber Management Environmental Impact Statement for the Eugene District released in November 1982. This is a very well prepared and thoughtful EIS for managing the District's resources for the next 10 years.

Alternative 4, "Seral Stage Distribution", preferred by the BLM, is the one this Company considers the most reasonable plan for managing the many resources available on Eugene District lands. A good level of timber volume (230 MMBF) is planned for the annual sale program. This compares well with the historical timber sale program on the District of 219 MMBF per year.

Ample old growth acreage is being reserved far into the future and in locations throughout the Eugene District so that diversity is maintained. Protection is also being given to water and air quality, wildlife and plant life.

We appreciate the opportunity to review this Draft.

Very truly yours,

W. Barzler
Forester, Land Use & Regulations

WJB:kw:10721

Mr. Dwight Patton
Page 2

6. Need to keep three logs per acre after logging on the ground as a minimum, 15 inch diameter and 20 feet long.
7. Need 30-35 acres per section of unthinned or unsprayed forest that has 30-80 year stands located on suitable topographic sites for Copper and Sharpshin Hawks, etc.
8. Replanting or seeding of logged lands must have diversity of species to avoid monoculture practices, providing minor conifers and hardwoods as natural kinds occur.
9. Road construction, logging distances and slash burning must avoid swamps, meadows, openings, etc.
10. All lands withdrawn and/or under deferred harvest must be managed, not primarily for timber harvest, but primarily for wildlife, fish, etc.
11. Limit sales of commercial projects to those that will enhance wildlife habitat.

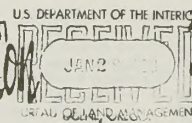
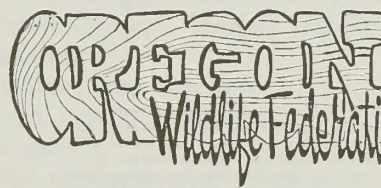
The Oregon Wildlife Federation appreciates the opportunity to include our input to this draft. We will alertly be watching the final output of this draft.

Yours for a better Oregon,

Dave Doran
Dave Doran
President
Oregon Wildlife Federation

DD:cd

cc: Fred Kohler (3) Public Lands Committee Chairperson, O.W.F.
Terry Thatcher and Andy Stahl, National Wildlife Federation
Northwest Resource Center
Dr. Jack Donaldson, Director, Oregon Department of Fish and Wildlife
Andy Kerr, Oregon Natural Resources Council



46 Dave Doran
President
2753 N. 32nd
Springfield, Ore.
97477

January 27, 1983

Mr. Dwight Patton, Manager
Eugene Bureau of Land Management District
P.O. Box 10226
Eugene, Oregon 97440

Dear Mr. Patton:

The Oregon Wildlife Federation has reviewed the draft of the Eugene Timber Management Environmental Impact Statement. With requested further clarification from BLM Staff, for which we are grateful, we submit our statement.

A deferred forest harvest for the first decade is not opposed, providing 116 year old trees and older are protected for a total of 46,673 acres minimum. This amount is needed for wildlife on the intensive forest land base.

Elements of an acceptable alternative would be:

1. Maintain sufficient elk habitat as per the minimum recommended for population needs by the Oregon Department of Fish & Wildlife Staff.
2. Riparian Zones 1 through 6 (stream orders) need protection by withdrawal to protect all vegetation therein including brush, trees, logs, snags, etc. Fish will benefit.
3. Protect habitat to provide for at least 23 pair of Spotted Owls (which will provide for many other species) as per minimum viable population recommended by the Inter-Agency Committee noting the 1000 acres per pair.
4. Protect all 23 potential eagle nests/roosts sites until the U.S. Fish and Wildlife completes reviews and then protect those determined to be essential.
5. Maintain three snags per acre, or green trees need to be provided not less than 50 feet high and 20 inch diameter.

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION X
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

47



2

REPLY TO
ATTN OF

M/S 443

MAR 2 1983

Dwight Patton
Eugene District Manager
Bureau of Land Management
P. O. Box 10226
Eugene, Oregon 97440

RE: Eugene District Timber Management Plan & Draft EIS

Dear Mr. Patton:

The Environmental Protection Agency (EPA) has reviewed the Eugene Timber Management Plan and Draft EIS. The plan provides a good presentation of the issues, impacts and mitigation measures associated with timber resource management in the district over the next ten years. We would like to suggest several changes in air and water quality aspects of the Draft EIS which would provide the reader with a better understanding of the environmental effects of implementing the plan and the steps which the Bureau will take to minimize them.

Water Quality

Every effort should be made to protect streams and stream banks from damage caused by road building and logging operations. This protection should extend for several years after logging operations are finished, until reforestation has taken effect. To this end, the Final EIS should:

1. Discuss water quality and stream bank protection strategies which have been successfully implemented in the Eugene District and which will be used during the ten years this plan is in effect.
2. Describe sediment control practices to be used by BLM (and required by Oregon forest practice regulations), and note steps BLM will take to minimize sedimentation via enforcement of the control practices and the Oregon regulations.
3. Discuss post-logging protection of stream water quality, especially on streams supporting anadromous fish runs.

47-1

Air Quality

A more complete assessment of likely impacts of each major alternative for the air quality analysis is needed. With information available on fuel loadings, harvesting and burning practices, emissions, and smoke management programs, a qualitative, if not quantitative, comparison of impacts should be developed in the Final EIS. In addition, we offer the following specific comments (based on the air impacts analysis on page 46):

47-2

47-3

47-4

47-5

1. While road dust is not likely to be a significant area wide issue, it could have substantial local effects in areas where unpaved roads are heavily used for log hauling and recreation. Such areas should be identified and control measures discussed in the Final EIS.
2. Be more explicit about the potential number of smoke intrusions which each alternative is likely to cause. Using permit criteria of the Oregon Smoke Management Plan (SMP), records of past smoke intrusions, and the planned amounts and locations of burning under each alternative, the areas and magnitude of smoke intrusions can be estimated.
3. Smoke directed away from population centers often affects rural communities and small towns. The SMP allows burning only under certain meteorological conditions. Past records provide data to identify rural areas and communities most likely to be affected by increased burning activity. Note plans to minimize smoke impact on these rural communities in the Final EIS.
4. The statement that smoke will not affect Class I areas is inconsistent with the previous statement that visibility intrusions can be expected in Class I areas. This apparent contradiction should be resolved.

Finally, the conclusion of the air quality analysis should indicate whether the preferred alternative is likely to improve or worsen air quality in the region, and what if any significant changes in air quality can be expected from implementation of the plan.

EPA has rated this Draft EIS LO-2 [LO: Lack of Objections; 2: Inadequate Information]. Thank you for providing us with the opportunity to review the report. Should you wish to discuss EPA's comments and recommendations, please contact Richard Thiel, Environmental Evaluation Branch Chief, at (206) 442-1728 or (FTS) 399-1728.

Sincerely,

John R. Spencer
Regional Administrator

Response to comments in Letter 47.

- 47-1 The section on Forest Management Treatments and Design Elements in Chapter 1 discusses design features that control and minimize water quality degradation during road construction, timber management and related activities. As noted in the Interrelationships section of Chapter 1, the district water quality standards meet or exceed those of the statewide water quality management plan, which defines standards for sediment, turbidity, temperature, channel stability, fecal coliform and coliform.

Additional information has been added to water quality, Impacts on Water Resources, Chapter 3, including design features that would be applied to first and second order streams in Alternatives 3, 4, 5, 7 and 8.

- 47-2 Road dust generated by logging traffic is not a major problem in the Eugene District since most of BLM's timber haul roads are surfaced. The District controls 1,720 miles of roads in the following categories: natural surface: 230 miles (13.4%); rock surface: 1,260 miles (73.2%); and bituminous surface treatment: 230 miles (13.4%). The natural surface spurs are usually found at higher elevations which are away from populated areas or recreation areas. The rock roads are primarily located at middle elevations and have a limited potential for dust conditions. Most of the bituminous treated roads are in valleys tributary to County road systems.
- 47-3 It is not possible to estimate with reasonable accuracy the potential number of smoke intrusions since the past five years burning caused only eleven days of problem conditions. These intrusions resulted in visual impairment only and did not violate the Oregon ambient air quality standards.
- 47-4 Rural communities likely to be affected by smoke from BLM slash disposal are referenced in the Oregon Smoke Management Plan. Protective measures are presently incorporated into burn plans to reduce smoke intrusions into rural communities. Careful attention to proper meteorological conditions and innovative burning techniques such as spring ignition, 100% mop-up and better firing methods have reduced smoke incidents in recent years. Numerous timber sales are designed to use alternatives to burning if the risk of violating smoke management criteria is present.
- 47-5 The revised text notes that occasional visibility intrusions can be expected in Class I Wilderness Areas.

List of Agencies, Organizations and Persons to Whom Copies of the Statement are Sent

Comments on the draft environmental statement were requested from the following:

Federal Agencies

Advisory Council on Historic Preservation
Department of Agriculture Forest Service
Soil Conservation Service
Department of Commerce
National Marine Fisheries Service
Department of Defense
U.S. Army Corps of Engineers
Department of Energy
Region X
Department of the Interior
Fish and Wildlife Service
Geological Survey
National Park Service
Bureau of Mines
Bureau of Reclamation
Small Business Administration
Environmental Protection Agency

State and Local Government

Oregon State Clearinghouse
Oregon Regional Clearinghouses
Lane Council of Governments
Umpqua Regional Council of Governments
District 4 Council of Governments
Oregon State Historic Preservation Officer
Boards of County Commissioners
Benton County
Linn County
Lane County
Douglas County

Copies of this final environmental impact statement will be available for public inspection at the following BLM offices:

Washington Office of Public Affairs 18th and C Streets Washington, D.C. 20240 Phone (202) 343-5717 Oregon State Public Affairs Office 729 N.E. Oregon Street P.O. Box 2965 Portland, Oregon 97208 Phone (503) 231-6277	Eugene District Office 1255 Pearl St. Eugene, Oregon 97401 (503) 687-6651
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Interest Groups (partial listing)

American Forest Institute
Associated Oregon Industries
Association of O&C Counties
Cascade Holistic Economic Consultants
Friends of the Earth
Industrial Forestry Association
Izaak Walton League
Natural Resource Defense Council
National Wildlife Federation
Northwest Environmental Defense Center
Northwest Timber Association
Oregon Environmental Council
Oregon Natural Heritage Program
Oregon Student Public Interest Research Group
Oregon Wilderness Coalition
Sierra Club
Southern Oregon Citizens Against Toxic Sprays
Southern Oregon Resource Alliance
Southern Oregon Timber Industries Association
The Wilderness Society
Western Forest Industries Association
Wildlife Management Institute

Reading copies will be placed in the following libraries: Portland State University, Portland; Oregon State University, Corvallis; University of Oregon, Eugene; Lane Community College, Eugene; Umpqua Community College, Roseburg; and Linn-Benton Community College, Albany; and public libraries in Salem, Eugene, Springfield and Cottage Grove.

LIST OF PREPARERS

While individuals have primary responsibility for preparing sections of an EIS, the document is an interdisciplinary team effort. In addition, internal review of the document occurs throughout preparation. Specialists at the District and State Office levels of the Bureau both review the analysis and supply information. Contributions by individual preparers may be subject to revision by other BLM specialists and by management during the internal review process.

Name	Primary Responsibility	Discipline	Related Professional Experience
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D. F. Buck, Jr.	Air, Soil, Water, Climate, Geology	Soil Scientist	5 years BLM (Soil Scientist, Environmental Protection Specialist)
Phillip D. Havens	Fisheries & Wildlife	Wildlife Biology	18 years (Wildlife Biologist)
Jeanne Johnson	Editor	Administrative Secretary	6 years BLM (Secretary, Editorial Assistant)
R. Michael Martin	Socioeconomics	Economics	6 years (Economist)
Joseph Ross	Recreation, Cultural Resources, Wilderness, Areas of Critical Environmental concern, Special Areas, Visual Resources and Energy.	Recreation	8 years (Forestry Technician, Biological Information Specialist, Outdoor Recreation Planner)
R. Gregg Simmons	Description of the Proposed Action and Alternatives, Vegetation	Forest Management	8 years BLM (Forester) 5 years Eugene, Oreg. 3 years Portland, Oreg.

Eugene District Personnel Contributing Substantial Input

James McLaughlin	Information supply, document review	Soil Scientist	3 years BLM 12 years U.S. Forest Service 6 years University of California Agricultural Experiment Station 1 year Soil Conservation Service
Jon Strandjord	Planning coordination, information supply, document review	Forest Management	8 years BLM (Planning and Environmental Coordination) 2 years FPC (Environmental Specialist) 1 year USFS (Forester)
Mike Meyers	Editor	Writer-Editor	5 years BLM (Writer-Editor, Community Planner)
Charles L. Thomas	Fisheries and Wildlife, Document Review, Information Supply	Wildlife Biology	5 years BLM Wildlife Biologist 15 years BLM Forester

Frank Wagner	Fisheries and Wildlife, Document Review, Information Supply	Wildlife Biology	6 years BLM Wildlife Biologist 1 year BLM Forestry Technician
Hal Westover	Information supply, document review	Forest Management	28 years BLM (Forest Management)
Cary Osterhaus	Information supply, document review	Forest Genetics	4 years BLM (Forest Geneticist) 2 years USFS (Project Geneticist) 2 years Oklahoma State University, Forestry Research Staff
Alan Schloss	Information supply, document review	Hydrologist	13 years BLM (Silviculturist, Hydrologist) 3 years USFS (Forester, Hydrology Technician)
Norm Gartley	Information supply, document review	Silviculture	12 years BLM (Silviculturist, Forester)

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APPENDICES

APPENDIX A RESULTS OF SCOPING



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APPENDIX A RESULTS OF SCOPING



United States Department of the Interior

BUREAU OF LAND MANAGEMENT

District Office
P. O. Box 10226
Eugene, Oregon 97440

MAY 2 1982

IN REPLY REFER TO

F:MCM
1600

Results of EIS Scoping Meeting - April 5, 1982

Dear Citizen:

On April 5, 1982, a public scoping meeting was held in Eugene to obtain comments to help BLM define appropriate alternatives and issues to be addressed in the environmental impact statement (EIS) on the Eugene District timber management plan.

Participants at the meeting suggested 14 different alternatives for consideration in the EIS. Letters in response to the invitation to participate in EIS scoping suggested some of the same alternatives plus one not brought up at the meeting. These alternatives were discussed the following day with the members of the former District Advisory Council who assisted in analysis of them and suggested an alternative not previously proposed by the public.

Based on public comments, recommendations of former District Advisory Council members, and BLM analysis, we have concluded that the EIS should analyze eight alternatives in addition to the Preferred Alternative. Some of these selected alternatives combine the major features of two or more of the 16 suggested potential alternatives. The selected alternatives in addition to the Preferred Alternative are:

- Maximum Timber Production
- Maximum Timber Production with Even Flow Departure
- Deferred Harvest
- East-West Corridor
- Ecosystem
- Maximum Ecosystem, with Withdrawal of Old-Growth
- No Use of Herbicides and No Credit for Fertilization and Genetics
- No Action

The following is a summary description of all 16 alternatives suggested and our analysis of their usefulness and relevance to the EIS process.

1. Maximum (Sustainable) Timber Production. This alternative contains the timber management elements of Alternative I in the booklet summarizing the preferred land use alternative and other alternatives considered. All commercial forest lands would be allocated for intensive timber production except those managed to protect bald eagles or existing developments such as recreation sites, and those withdrawn (TPCC) because of uncertainty of reforestation or soil instability (fragile sites). This establishes one end of a range of reasonable land-use allocation alternatives for analysis in the EIS.

2. Maximum Timber Production with Even Flow Departure. This alternative would depart from even flow for two decades, on the land use base described above. It addresses a relevant timber management issue. Any departure would, however, lead to a subsequent (after two decades) decline in harvest below the even-flow level. To make this alternative reasonable, the design of it will limit such declines to 5 MMBF below the even-flow level.
3. Maximum Timber Production From All Lands. This alternative would differ from Alternative 1 by making available for timber harvest all lands (TPCC) withdrawn due to reforestation problems or fragile sites. Since present technology does not show us that such a harvest would be sustainable this is not considered to be a realistic alternative. Some persons consider it a useful reference point, however, so the EIS will display the annual harvest level which could be obtained from inclusion of this land in the timber harvest base, although no further analysis of the option will be made.
4. Deferred Harvest. This alternative would protect from harvest during the plan decade all lands that would be protected under the preferred alternative. However, the allowable cut would be computed as though no land were to be managed on an extended rotation to maintain old-growth forest values for wildlife habitat diversity. This alternative is useful to analyze as it would provide a high level of timber production in the coming decade while preserving about seven percent of the commercial forest base in old-growth stands through a decade of advanced research on old-growth ecology.
5. East-West Corridor. This alternative would provide an east-west linkage of diversified wildlife habitat between National Forests in the Coast Range and Cascade Range, and the proposed systems of wildlife habitat corridors in the adjacent BLM Coos Bay and Roseburg Districts. This corridor would establish a regional system of habitat diversity for spotted owl preservation and for other wildlife purposes. The Eugene District provides the only opportunity for such a linkage in northern and central Oregon. This corridor would contain a variety of seral stages distributed so as to prevent isolation of specialized habitats and to preserve opportunities for genetic interchange. About 15,000 acres of District land would be managed on an extended rotation of 350 years to create this corridor. Although this alternative was not directly derived from public scoping, it was explained at the April 5 meeting and found to be useful for analysis by the former Advisory Council.
6. Ecosystem Management. This alternative, which contains the timber management elements of Alternative 3 in the booklet summarizing the preferred and other land-use alternatives, would emphasize the protection and enhancement of natural values, while providing for a moderate level of timber production. About 25 percent of the District would be managed on extended rotations of 350 years to provide a high level of wildlife diversity on District lands. About 17 percent of the District would be withdrawn to protect riparian areas. This alternative would provide a high level of protection for visual resources and a wide variety of recreational opportunities, including an allocation for primitive recreation in the Windy Peak Area. It is a useful land-use allocation alternative to analyze.

7. Extended Rotation of 200-250 Years. This concept could be applied as a substitute for the 350-year extended rotation element of the preferred or other alternatives. It does not, however, provide the older seral stages which make the extended rotation approach so valuable to wildlife. Neither would it provide much additional timber volume for harvest. Since it would not help much to meet any primary objectives in a different way than other alternatives, analysis of it is not considered useful.
8. Maximum Ecosystem Management. This alternative, which contains the timber management elements of Alternative 4 in the booklet summarizing the preferred and other land-use alternatives, establishes the other end of the range of reasonable land-use allocation alternatives. It would provide maximum protection and enhancement of wildlife habitat, water quality, visual resources and other natural values. About 45 percent of the District would be managed on an extended rotation of 350 years to provide wildlife habitat for old-growth dependent species. About 17 percent of the District would be withdrawn to protect riparian areas. This alternative would also provide a high level of protection for visual resources and a wide variety of recreational opportunities, including an allocation for primitive recreation in the Windy Peak Area.
9. Withdraw Old Growth. This alternative, raised in a letter, but not at the public meeting, would call for withdrawal from all timber harvest of timber stands above a specified age. It would have many similarities of impacts with Alternative 8 above, and essentially identical objectives. Accordingly, it is considered most useful to combine it with Alternative 8, withdrawing all stands currently over 160 years old.
10. No Herbicides. This alternative would be the same as the proposed action in timber base and management practices except that herbicides would not be used to control grass, brush and hard wood species growing in competition with commercial tree species. This would eliminate herbicide treatments for the control of competing vegetation prior to reforestation (site preparation), during establishment (stocking maintenance) and after young stands become established (release). This addresses a major timber management issue and therefore is relevant to analyze in the EIS. For useful comparison with the proposed action, vegetation control by biological, mechanical or manual methods would be prescribed to the same dollar level of investment as used for herbicides and other vegetation management practices in the proposed action.
11. No Credit (Allowable Cut Effect) for Fertilization, Genetically Improved Trees, or Herbicides. This alternative would include the stated intensive management practices but the allowable cut computation would not take credit for growth increases expected to result. The use of herbicides or alternative vegetation management practices is an integral part of the Bureau's reforestation program, and no separate allowable cut effect occurs from them. The allowable cut credits for fertilization and genetically improved stock, however, have been controversial. Elimination of these credits can be included with the No Herbicide alternative to address a relevant mix of compatible issues.

12. No Credit (Allowable Cut Effect) for any Intensive Management Practice. This alternative would eliminate the credit in allowable cut computation for all intensive management practices including thinning. Significantly less people at the public meeting supported its inclusion in the EIS, than supported inclusion of Alternative 11 above. To address the allowable cut effect issue in two separate alternatives does not seem warranted.
13. Selective Cut, All-Age Management. This alternative would preclude clear-cutting and substitute all-age management and selective harvesting. Discussion with the former Advisory Council members brought out objections because of infeasibility of maintaining Douglas-fir stands on a large portion of the District under such management. While harvest under the Preferred Alternative or any alternative would include selective cut, all age management where appropriate, it is not reasonable or prudent to analyze this approach as the only available management scheme. In addition, the repeated entry of timber stands required by such an approach to management would result in similar impacts as would clear-cut management, on the significant soil, water, fish and wildlife resources. Only visual impacts would be markedly less. For the overriding reason of non-sustainability, however, it was concluded that this alternative is not relevant to analyze in the EIS.
14. Require Analysis of Economic Impacts For Each Timber Sale. This would not be a clearly distinct alternative, in either the allocation of land, or the intensity of timber management, or the rate of harvest. Thus, there is no practical way to analyze its environmental impacts as different from those of other alternatives.
15. Adjust Sale Levels To Demand. To define in advance the sale levels that would result from such an alternative, and thus analyze their impacts, we would have to be able to predict expected demand levels for the decade. There is no forecast consensus on which a defensible prediction could be based. This alternative is essentially beyond the scope of a regional EIS such as this one.
16. Deferred Harvest Combined With East-West Corridor, No Herbicides and Adjustment of Sale Levels to Demand. This alternative would include the elements of Alternatives 4, 5, 10 and 15 previously discussed. It is impractical specifically because of the infeasibility of definition of Alternative 15. In addition, only two participants in the scoping meeting favored its inclusion for analysis in the EIS. Only one other suggested alternative received as little support from the participants. The elements of this suggestion, other than adjustment of sale levels to demand, will be included in other EIS alternatives. Thus they will be available to the decisionmakers for incorporation in the final decision.

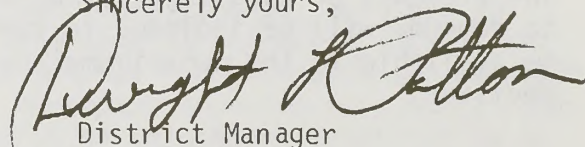
The public, through the EIS scoping meeting and letters, did an excellent job of defining a number of issues they believed the EIS should address. The EIS analysis will not be limited to these issues, but will include all of them unless some cannot be effectively addressed in the context of the impacts of the timber management program, or cannot be effectively addressed in the time allotted to complete the EIS.

The suggested issues are:

1. Firewood availability
2. Budget constraints
3. Benefit/cost analysis without allowable cut effect
4. Impacts of plan for decade
5. Wildlife--including old-growth research
6. Future values of wildlands
7. Job equivalency of nonmarket goods
8. Alternative jobs
9. Wildlife: risk assessment
10. Compliance with House Memorial No. 1 and Forest Practices for Oregon
11. Fisheries
12. Visual
13. Cultural
14. Botanical
15. Tradeoffs of timber production
16. Windy Peak
17. Employment of dependent communities
18. O&C receipts distribution by alternatives, by county, by dollars
19. Alternatives to protect spotted owls
20. Long-term site productivity
21. Siuslaw Wild and Scenic River status
22. Quality of old-growth
23. Snag management

The audience was also asked for its preference on meetings which could be held during the public comment period on the draft EIS. There was no support for a formal hearing. The majority favored an open house workshop at the District Office, but there was also some support for an informal meeting instead of, or in addition to, the workshop. After discussion with the former District Advisory Council members, we concluded that we would have an open house workshop and later public meeting. The latter would be held under the auspices of the District Advisory Council which we expect to be rechartered by then. Details on dates will be announced with release of the draft EIS.

Sincerely yours,



Dwight H. Patton
District Manager

Appendix B

O&C Forest Resources Policy

This statement sets forth BLM policy for management of the Revested Oregon and California (O&C) Railroad and reconveyed Coos Bay Wagon Road Grant lands situated in the State of Oregon. It reflects the provisions of the Act of August 28, 1937 (O&C Act), and the effects of other relevant legislation and Executive Orders.

The BLM manages 2.1 million acres of O&C lands in western Oregon. The revenues and employment generated by timber sales, conversion of timber to wood products, and other marketable values derived from these lands significantly affect the State and local economies. It is further recognized that public use of these lands through consumptive and non-consumptive recreation, including sport hunting and sport and commercial harvest of salmon and steelhead produced in streams on the O&C lands, also contributes to the local and State economies. The primary objectives of the management program on the O&C lands are to manage for a high-level and sustained yield output of wood products needed to contribute to the economic stability of the local communities and industries, and to provide for other land uses as established in the O&C Act and other legislation.

The following principles will guide BLM in managing the forest resources on O&C lands:

1. Resource management plans or management framework plans as developed through the land-use planning process shall constitute the primary guides for carrying out legislative mandates and Bureau policies.

2. All O&C land administered by BLM in western Oregon will be classified according to the Timber Production Capability Classification. Lands classified as suitable for timber production shall be managed for timber and wood product production, to the extent possible, under the requirements of law. Lands classified as nonsuitable for timber production shall be allocated to the fullest extent possible to meet the needs for non-timber public land uses. Where nonsuitable lands cannot adequately provide for other uses set forth in the O&C Act and other applicable legislation and Executive Orders, suitable lands may be managed to meet the needs for the following:

- a. Maintenance of water quality in accordance with Federal and State standards. Timber harvesting may be restricted or excluded only in areas where mitigating measures will not maintain water quality standards.

- b. Protection of wetlands, including riparian zones. Timber harvesting may be restricted or excluded only in areas where mitigating measures will not be effective.

- c. Conservation of specifically identified habitats for federally listed, threatened and endangered species. Timber harvesting may be restricted or excluded only in areas where mitigating measures will not be effective.

- d. Research and development pertinent to the management of the land resources. Timber harvesting may be restricted or excluded only in areas where mitigating measures will not maintain resource values, and research is assessing these values: timber harvesting may be restricted or excluded pending the research conclusions.

- e. Consideration of State goals and objectives concerning State-listed, threatened and endangered species in land-use planning and management. Restrictions may be utilized to achieve the habitat objectives developed from the BLM plans.

- f. Consideration of habitat needs of native species. Restriction of timber harvest may be considered when these habitat needs cannot be met through established timber harvest practices.

- g. Protection of developed high-value recreation areas, including the visual quality of significant scenic areas. Restriction or exclusion of timber harvest may be considered in the protection of established recreation facilities. Timber harvest may be restricted in the protection of scenic areas only where mitigating measures will not prove effective.

3. The allowable cut determination shall be based on a nondeclining harvest level over time. Departures from the nondeclining harvest level may be permitted in either direction. Any increases shall not exceed the long-term sustained yield capacity of the land; decreases shall be economically and/or biologically justified and timed so as to minimize impacts on dependent industries and local economies.

The Seral Stage Distribution Concept Background

The mid-age and old-growth stands remaining today are the result of complex interactions between plants and animals over time. Evidence points towards the simultaneous evolution of these plants and animals. Yet, the exact functioning and purpose of many of these interactions have not yet been studied in depth. For example, the mechanisms for nitrogen fixation have only been identified within the past decade. Additionally, there are indications that mycorrhizal inoculation by rodents may be critical to plantation establishment and survival in some instances (Franklin et al. 1981). There are many unknowns regarding which portions of this interacting web, if any, must be replicated by management if long-term timber production is to be maintained at high levels. What is known, however, is that the timber

management program would liquidate the remaining old growth stands in a relatively short time if unconstrained.

Specific Criteria for Implementing Seral Stage Distribution in Western Oregon.

1. Each district is to identify one large block of mid-age and/or old-growth timber, preferably on a 50 percent-50 percent basis, 300- to 500-acres in size, in each seed zone within each 500' elevational band.

Seed zones are accepted as generally encompassing a geographic area within which the factors affecting reforestation and subsequent growth are relatively homogenous. They also form the best currently available geographic orientation for a system of old-growth reservations. The 300- to 500-acre size is generally recognized as being adequate to maintain old growth interior species if attention is given to configuration, probable wind firmness, etc. While a 50-50 mix of mid-age and old growth is preferred, in many cases this may not be possible in which case preference should be given to maintaining the old-growth seral stage.

2. Each district is to identify, where possible, connecting corridors between large blocks consisting of 50- to 100-acre small blocks spaced at 1 to 1-1/2 mile intervals containing mid-age and/or old growth on a 50-50 basis. Where a linkage via corridor is not feasible because of the isolation of a particular large block, consideration should be given to providing such isolated large blocks with a distribution of surrounding satellite small blocks.

Small blocks are intended to prevent genetic isolation of the smaller birds and animals that may prove to be critical to long-term timber production in a particular area. The 50- to 100-acre size and the 1 to 1-1/2 mile distribution are judgments as to what would comprise a probably effective interim measure.

Results of Applying Specific Criteria

Figure B-1 indicates the seed zones which cover the five western Oregon district boundaries. There are portions of 28 seed zones which occur on BLM-administered lands. However, sufficient acres of old growth to meet the criteria only occur within 14 of the seed zones. Table B-1 shows the elevation intervals where large blocks have been identified in each seed zone, and the district that is expected to provide protection.

Table B-1 Tree Seed Zones by Elevation in Western Oregon

Zone	Elevation	District
053	1,500 -2,000	Salem
061	1,000-1,500	Salem
061	1,500-2,000	Salem
061	2,000-2,500	Salem
062	500-1,000	Coos Bay
062	500-1,000	Coos Bay

062	1,000-1,500	Eugene
062	1,000-1,500	Coos Bay
062	1,500-2,000	Coos Bay
071	500-1,000	Coos Bay
071	500-1,000	Coos Bay
071	1,000-1,500	Coos Bay
071	1,000-1,500	Coos Bay
071	1,500-2,000	Coos Bay
071	1,500-2,000	Coos Bay
071	2,000-2,500	Coos Bay
072	500-1,000	Coos Bay
072	500-1,000	Coos Bay
072	1,000-1,500	Coos Bay
072	1,000-1,500	Coos Bay
072	1,500-2,000	Coos Bay
072	1,500-2,000	Coos Bay
072	2,000-2,500	Coos Bay
072	2,000-2,500	Coos Bay
072	2,500-3,000	Coos Bay
072	2,500-3,000	Coos Bay
251	1,500-2,000	Salem
252	500-1,000	Coos Bay
252	500-1,000	Roseburg
252	500-1,000	Eugene
252	1,000-1,500	Eugene
252	1,000-1,500	Roseburg
252	1,500-2,000	Salem
270	500-1,000	Roseburg
270	1,000-1,500	Roseburg
270	1,000-1,500	Roseburg
270	1,500-2,000	Roseburg
270	2,000-2,500	Roseburg
270	2,500-3,000	Medford
452	1,500-2,000	Salem
452	3,000-3,500	Salem
452	3,500-4,000	Salem
461	1,000-1,500	Salem
461	1,500-2,000	Salem
461	2,000-2,500	Salem
461	2,500-3,000	Salem
461	3,000-3,500	Salem
461	3,500-4,000	Salem
462	1,500-2,000	Salem
481	1,500-2,000	Eugene
481	2,000-2,500	Eugene
481	2,500-3,000	Eugene
491	500-1,000	Roseburg
491	1,000-1,500	Roseburg
491	1,500-2,000	Roseburg
491	2,000-2,500	Roseburg
491	2,500-3,000	Roseburg
491	3,000-3,500	Roseburg
491	3,500-4,000	Roseburg
492	1,000-1,500	Roseburg
492	1,500-2,000	Roseburg
492	2,000-2,500	Roseburg
492	2,500-3,000	Roseburg
492	3,000-3,500	Roseburg
492	3,500-4,000	Medford

The East-West Corridor

The preferred alternative (Alternative 5) incorporates land allocations and management practices compatible with the O&C Forest Resources Policy. In addition to habitat management provided in riparian areas and TPCC withdrawn lands and mitigating measures applied on the intensive timber base, the preferred alternative identifies a system of allocations and practices designed to contribute to habitat diversity for the northern spotted owl and other wildlife--the east-west corridor.

The corridor would provide an east-west linkage between National Forests in the Coast and Cascade Ranges, as well as the wildlife habitat allocations described in the South Coast-Curry Record of Decision and the Roseburg BLM final EIS. The corridor consists of a series of sites that provide a variety of seral stages, distributed to preserve some opportunities for genetic interchange.

Within the corridor, "extended rotation area" sites total about 11,000 acres, located in the pattern shown in figure B-2. This acreage would be managed on a 350-year rotation to provide habitat for species dependent on, or strongly oriented to, old-growth and mid-aged seral stages. This system also incorporates six of the seven "large block" areas described in the Seral Stage Distribution System, to ensure retention of mid-age/old-growth stands that may contribute to long-term forest productivity.

The corridor also encompasses intensive timber management acreage totalling about 20 percent of the District's commercial forest base. On these sites timber harvest will be designed and scheduled to provide an average of three snags, or three green trees to be left for snags, per acre for species requiring this habitat structure. Also, at least one 25-acre stand will be left unthinned in each BLM-administered section in the corridor to provide habitat for Cooper's and sharp-shinned hawks (see figure B-2).

The system benefits wildlife through interaction with adjacent public administrations, while recognizing the limitations of existing age class distributions and the intermingled ownership pattern within the District.

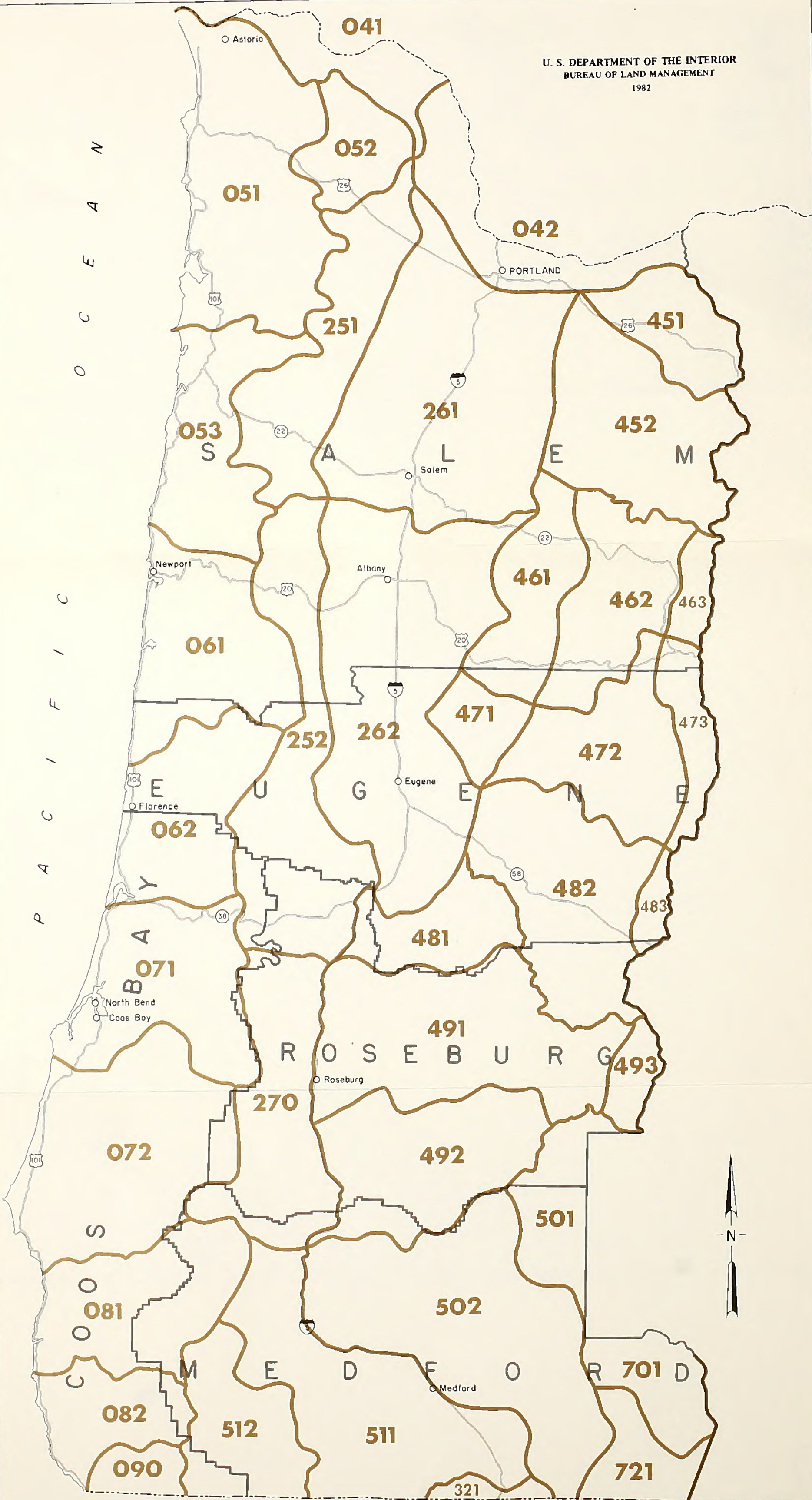


FIGURE B-1
WESTERN OREGON TREE SEED ZONES

Scale 1:1,000,000

LEGEND
261 Seed Zones Numbers
— Seed Zones Boundary

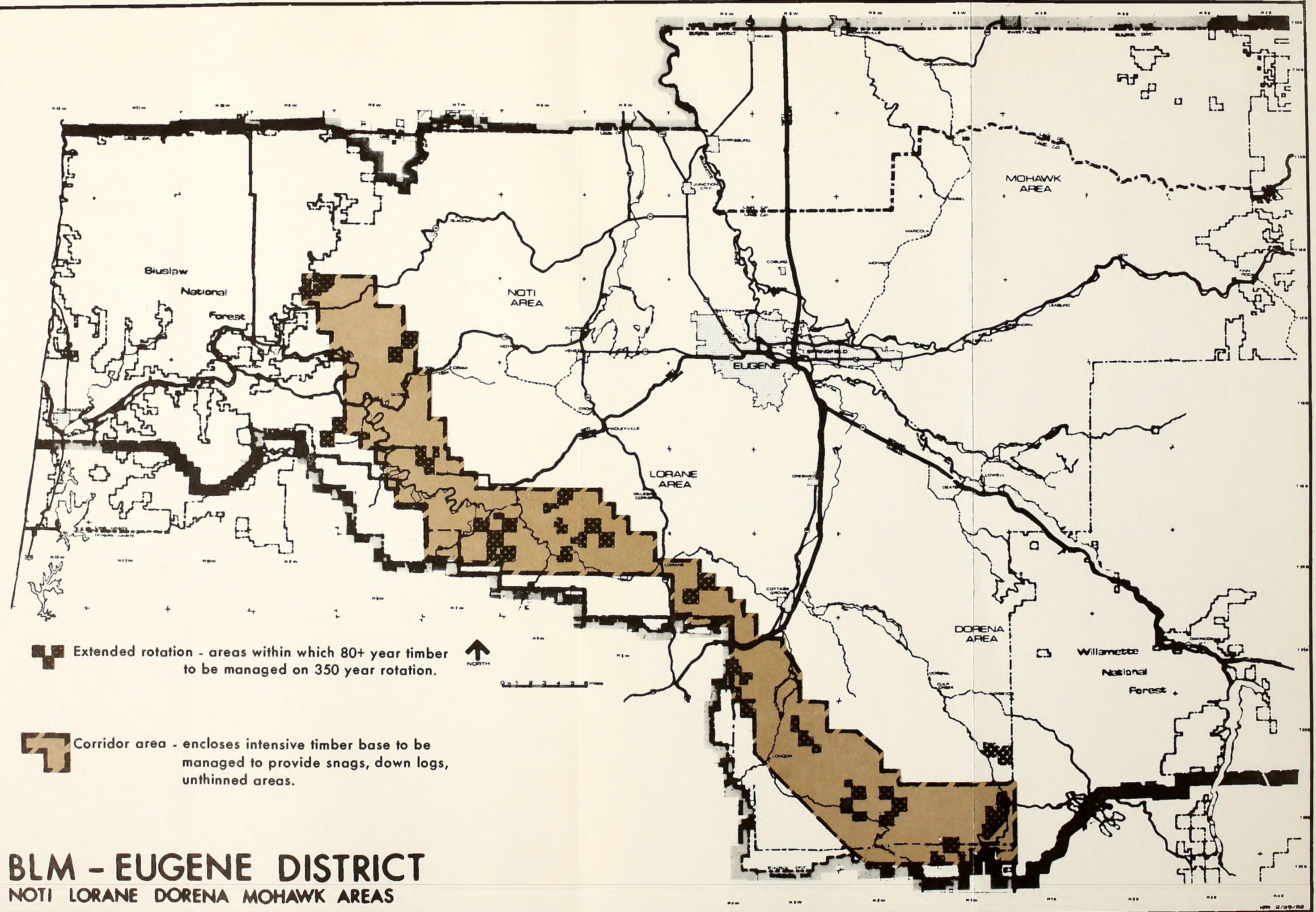


FIGURE B-2
EAST—WEST CORRIDOR

Appendix C

DEVELOPMENT OF THE PROPOSED ACTION AND ALTERNATIVES

Defining the proposed action is the last phase of the planning process prior to preparation of the EIS. Alternatives to the proposed action are identified during the scoping phase of the environmental analysis process. Each alternative analyzed in this EIS contains a mix of variables encompassing a range of choices for decisionmakers as required by the CEQ Regulations (40 CFR 1502.2(2)).

In determination of a sustained yield allowable cut, the primary variables are land classification, acres allocated to timber production and enhancement of growth assumed from specific development practices or treatments. Following in the order of occurrence are brief descriptions of the inventories and processes employed to determine the allowable cut level for the proposed action and each alternative.

Land Classification and Inventory

Timber Production Capability Classification

The Timber Production Capability Classification (TPCC) is an intensive inventory process initiated in 1972 to categorize all public land administered by BLM in western Oregon based upon the land's physical and biological capacity to produce timber. TPCC was conducted in accordance with Oregon Manual Supplement 5250.

The TPCC identified 286,249 acres of commercial forest land which could be managed on a sustained yield basis. Approximately 21,555 acres of the commercial forest land were determined to be incapable of undergoing harvest without significant site degradation. These lands, excluded from the timber production base, were placed in this category when it was judged that economically reasonable technology was not available to mitigate such degradation. The remainder of the SYUs' 8,943 acres was determined to be non-forest or non-commercial forest lands. If new data become available from intensive on-site analysis or improvements occur in technology, the classifications may be altered.

Operations Inventory

For BLM to carry out the timber management program effectively, specific information as to the location and current condition of the various forest types within the land base must be available to the managers. This is accomplished through the Operations Inventory (OI) in accordance with procedures contained in the Operations Inventory Handbook (STORMS).

The OI is an intensive inventory providing forest type maps which show the location and classification of

each homogeneous forest type island. OI record cards list acreage, silvicultural needs and opportunities for application of forest management practices on each type island. Operations Inventory thus provides a basis for establishing priorities for treatment based on stand conditions and productivity.

1978 Forest Reinventory

A reinventory of commercial forest land in the SYUs was completed in 1978 employing procedures for extensive inventory jointly developed by the USFS and BLM (USDA, FS 1976). The reinventory uses the same basic inventory design as was used for determination of the present allowable cut, but with further refinement to include stratification of commercial forest land based on information obtained from the OI and TPCC. Statistical analysis indicates the sample mean volume per acre in the Eugene SYUs is within 6 percent of the true mean volume per acre at one standard deviation.

The reinventory indicates a forest distribution as displayed in Table C-1. Age classes range from non-stocked to 500 years.

Table C-1 Existing Acres by Age Class on All Timber Management Lands

Age Class	Acres	Age Class	Acres
Non-stocked	13,031	210	1,694
1-5	21,239	220	1,135
10	30,112	230	3,896
20	38,601	240	1,135
30	36,654	250	6,711
40	34,256	260	1,444
50	14,522	280	1,158
60	5,896	300	8,230
70	7,425	310	2,567
80	7,686	340	1,444
90	9,522	350	4,353
100	5,252	370	405
110	8,822	380	948
120	9,099	400	4,192
130	3,519	440	1,135
140	4,861	450	948
150	1,932	460	1,135
160	1,527	470	412
170	3,405	500	2,361
180	2,083		
200	3,122	Total	307,869

Source: 1978 inventory for Eugene SYUs.

Other Resource Inventories

Inventories were conducted to identify and categorize specific capability and potential of resources other than timber. Recreation planners applied the BLM's Recreation Information System, an inventory approach for determining inherent

potential of the land to support various recreation activities. Visual resource specialists inventoried and classified the SYUs for visual and esthetic considerations. A review and compilation of known cultural resource data (Class I cultural resource inventory) has been completed. Wildlife biologists classified habitat types within the District and performed field inventories on selected species including northern spotted owl and bald eagle. Fisheries biologists conducted surveys of streams within the district. Botanical surveys for threatened and endangered plants were initiated for the Eugene District in April 1978 and are updated yearly.

Criteria for Selecting the Original Proposed Action (Alternative 7)

The following criteria were used by the District Manager in developing the Original Proposed Action:

- Meet the long-term objective to attain a high level of sustained yield timber production to satisfy regional and national needs.
- Minimize soil loss caused by both management activities and uncontrolled activities (e.g., off-road vehicles).
- Contribute to the improvement or maintenance of water quality in streams, rivers and municipal watersheds, compared to current conditions.
- Minimize sediment reaching the stream and water temperature changes that occur as a result of management activities.
- Minimize impacts on air quality in residential areas.
- Provide for developed and dispersed recreational opportunities to meet demands related to BLM-administered lands.
- Provide for maintaining the visual quality of the forest landscape in areas of high sensitivity.
- Protect, or improve and develop fish spawning, rearing and migration habitat.
- Protect important wildlife habitat.
- Protect or enhance habitat of threatened or endangered plant and animal species.
- Provide for scientific and educational study through such programs as Research Natural Areas.
- Allow minerals exploration and development while protecting other resource values.
- Allow adequate land allocations for

communication sites, access development and designation of right-of-way corridors while protecting other resource values.

- Provide local economic stability through high levels of local employment and other use opportunities available on lands administered by BLM.
- Provide for a high level of contribution to local public revenues from resources and activities available on public lands.
- Demonstrate consistency with State planning goals (Land Conservation and Development Commission), acknowledged local comprehensive plans, and officially approved local resource related plans, programs and policies.
- Demonstrate consistency with other Federal resource-related plans, programs and policies. (Provide coordinated approach to regional issues and projects or proposals crossing administrative lines.)

Land Use Allocation

During the development of the proposed land use allocations, broad land use alternatives (MFP Alternatives) were identified and reviewed by the District to assess their effects. These MFP alternatives were circulated for public review and comment in 1981. Scoping (see Appendix A) of the EIS led to the conclusion that four of these land use allocation alternatives (some slightly modified) were important enough to analyze in depth. EIS Alternatives 2, 7, 9 and 10 were adapted from those alternatives.

Resource protection varies by alternative relative to the mixture of land use allocations (Table C-2) and management features prescribed. Table C-3 shows acreage allocations, by resource, of the MFP withdrawals and constrained timber production bases.

When final MFP timber management decisions are made, they will form the management prescriptions. Similarly, actions for other resources, e.g., habitat management plans, will be within the MFP guidelines.

Table C-2 Land Use Allocation Proposed for the EIS Alternatives In Acres

	Alternatives									
	1	2	3	4	5	6 ¹	7	8	9	10
	Max./EFD	Max. Tbr.	Def. Har.	S.S.D.	E-W Cor.	No Action	O.P.A.	No Herb.	Eco.	Full Eco.
No Planned Timber Harvest										
Non-Commercial Forest Land	340	340	340	340	340	9,392	340	340	340	340
Non-Forest Lands ²	8,603	8,603	8,603	8,603	8,603	12,365	8,603	8,603	8,603	8,603
Fragile Site Withdrawals	13,523	13,523	13,523	13,523	13,523	0	13,523	13,523	13,523	13,523
Reforestation Withdrawals	8,032	8,032	8,032	8,032	8,032	0	8,032	21,289 ⁶	8,032	8,032
MFP Withdrawals ³	210	210	9,558	14,058	9,558	295	9,558	9,558	36,670	71,124
Sub-total	30,708	30,708	40,056	44,556	40,056	22,052	40,056	53,308	67,168	101,622
Timber Production Base										
Acres										
Intensive Timber Production Base	286,039	286,039	276,331 ⁵	271,831	265,038	294,695	253,085	251,786	135,026	58,511
Constrained Timber Production Base										
VRM (MHA-120)	0	0	360	360	360	⁴	360	360	29,410	55,458
Wildlife (MHA-350)	0	0	0	0	11,293	⁴	23,246	11,293	85,143	101,156
Total Timber Production Base	286,039	286,039	276,691	272,191	276,691	294,695	276,691	263,439	249,579	215,125
Total SYUs Acres	316,747	316,747	316,747	316,747	316,747	316,747	316,747	316,747	316,747	316,747

¹ Land use allocations for Alternative 6 (No Action) resulted from the land classification instructions used in the 1970 planning process.

² Existing recreation sites are contained in this category.

³ These are commercial forest lands which would be withdrawn from the timber production base for other resource considerations. See Table C-3 for the identified resource and acres allocated.

⁴ A multiple use factor, applied to the intensive timber base, was used during the 1970 cut calculation process, consisting of an approximate 3 percent reduction in yield on 54,720 acres for visual and wildlife considerations.

⁵ Approximately 19,000 acres of old-growth within the intensive timber production base would be deferred non harvest during the plan decade, pending advanced research on old-growth ecology.

⁶ In this alternative, an additional 13,257 acres would be withdrawn from the intensive timber production base. Without the use of herbicides, these acres could not be adequately restocked within the required 5-year period, using all available and economically reasonable technology.

Table C-3 Acreage Allocation by Resource

Resource Considerations in Acres	Alt. 1 Max/EFD	Alt. 2 Max. Tbr.	Alt. 3 Def. Har.	Alt. 4 S.S.D.	Alt. 5 E-W Cor.	Alt. 6 No Action	Alt. 7 O.P.A.	Alt. 8 No Herb.	Alt. 9 Eco.	Alt. 10 Full Eco.
MFP WITHDRAWALS										
Botanical	0	0	0	513	0	0	0	0	513	513
Cultural	40	40	40	40	40	0	40	40	40	40
Research Natural Areas	0	0	780	780	780	0	780	780	780	780
Wildlife:										
Bald Eagle	170	170	103	103	103	0	103	103	103	103
Old Growth Blocks	0	0	0	3,987	0	0	0	0	0	44,107
Riparian Areas	0	0	8,675	8,675	8,675	295	8,675	8,675	35,234	25,581 ²
CONSTRAINED TIMBER PRODUCTION BASE ¹										
Visual Resource Management	0	0	360	360	360	42,660	360	360	29,410	55,458
Wildlife:						12,060 ³				
Bald Eagle	0	0	0 ⁴	0	40	0	850	40	1,500	400
Northern Spotted Owl	0	0	0	0	10,900	0	17,000	10,900	38,000	9,000
Roosevelt Elk Cover	0	0	0	0	1,800	0	4,000	1,800	13,000	5,000
Black-tailed Deer Cover	0	0	0	0	5,000	0	10,000	5,000	23,000	16,000
Cavity Users	0	0	0	0	10,900	0	19,400	10,900	46,000	13,800
Raptors	0	0	0	0	10,900	0	22,250	10,900	61,300	67,700
Large Carnivores and Fur Bearers	0	0	0	0	10,900	0	21,300	10,900	59,500	57,300

¹ Acres are not additive due to overlap.

² Actual acres of riparian zones are the same as in Alternative 9; however, those riparian zone acres which are also old-growth timber are included in old-growth blocks.

³ During the 1970 planning process, no breakdown by group was estimated; only a total figure for wildlife was given.

⁴ Acres identified under Alternative 7 as constrained timber base for wildlife would be deferred from harvest in Alternative 3 during the plan decade.

Allowable Cut Computation

Forest Simulation Model

A computerized forest simulation model (SIMIX) is used to determine the highest sustainable allowable cut for each alternative. SIMIX calculates the allowable cut associated with the stated forest management plan. It can maximize an even-flow level of cut for some specific management regime, or a series of cut levels may be specified for as many as the first 10 decades followed by an even-flow level for the remainder of the projected period (40 decades). This lengthy projection period is not an attempt at a 400-year plan. It is used only to assure that the condition of no planned reduction in allowable cut can be met.

The clearcut option of SIMIX was utilized since clearcut is the predominant harvest method in all alternatives. For accuracy in measuring lumber and plywood production, the allowable cut is computed and projected into the future on the basis of cubic feet.

SIMIX computes the harvest level based on present inventory and projected growth resulting from the application of certain management practices (mortality salvage, precommercial and commercial thinning, commercial thinning only, forest genetics and final harvest cuts). Another treatment, fertilization, is included in conjunction with one or more of the above treatments. SIMIX must be told treatments, times of application and the number of acres to be treated. No rotation age is set; instead, a minimum cutting age constraint is specified. SIMIX is not designed to handle economic values or costs, and it does not seek out alternative schedules or strategies.

The model, designed for forests under an even-aged system of management, produces output data by decades for each age and treatment class and summarizes them numerically and graphically. These data include level of growing stock, annual growth, acreage by silvicultural practices and volume by harvesting practice. Consequently, it permits alternative plans to be evaluated on the basis of their respective production levels and fiscal requirements.

and serves as a basis for programming personnel and funds for the alternative selected. In effect, a management plan is developed that schedules the production from commercial thinning, mortality salvage and final harvest operations and also the acreages for such treatments as reforestation and precommercial thinning. The model is geared to the proposed policies but is flexible to the extent that other regulatory policies can be applied in its use.

The Allowable Cut Effect (ACE)

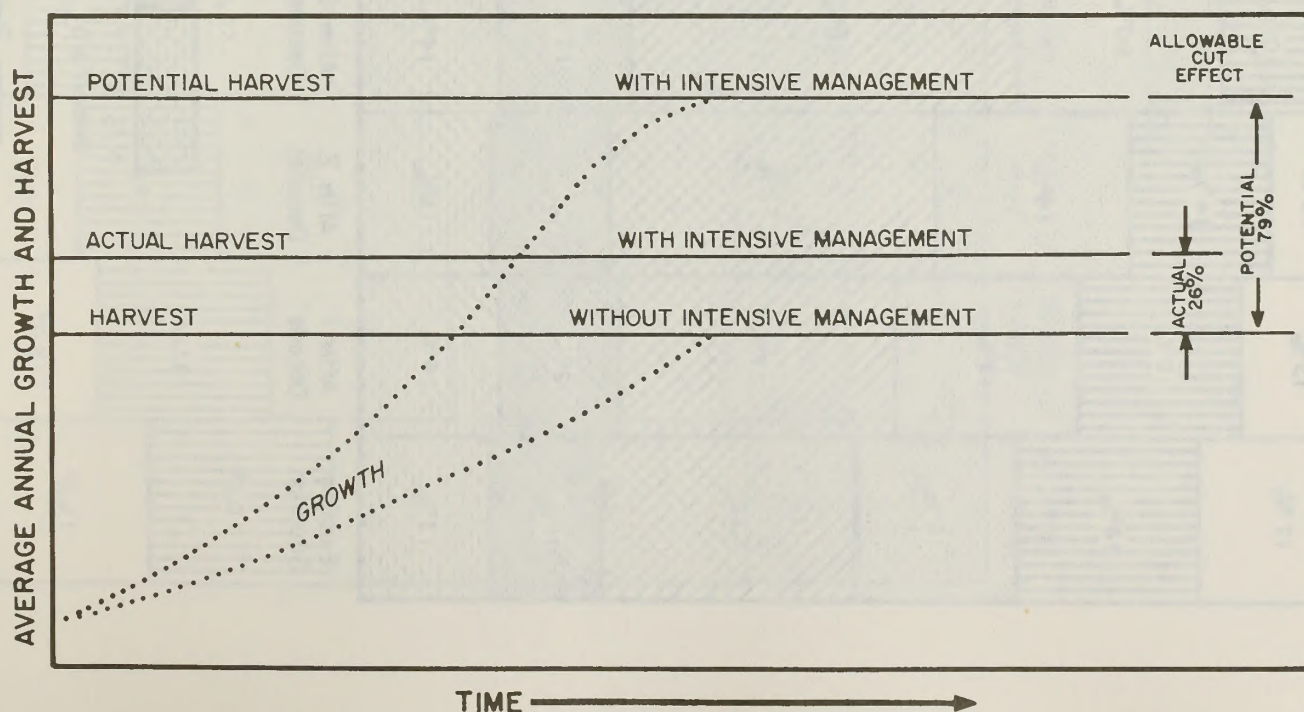
A forest that is composed primarily of old-growth timber and recently cut-over stands exhibits a relatively low average annual growth. This results from slow or negative growth of the old stands and the fact that growth is not measurable (in end-product terms) in the young stands until they reach 20 or 30 years of age. Such a forest is in transition from an unmanaged to a managed or regulated state. In the classical sense, the regulated state is achieved when average annual harvest and growth are in equilibrium. At this point, maximum yield on a sustainable basis is reached. To compute an allowable cut on a forest in the transition state using this criteria would be extremely conservative and greatly lengthen the time until the regulated state was achieved. The BLM uses an alternative approach which is to project growth into the future based upon assumptions about management levels and to utilize excess harvest age timber to bridge the time gap until the ultimate growth level is achieved. This process of taking credit now for future growth increases expected to result from management has been termed the "Allowable Cut Effect" (ACE).

Figure C-1 illustrates this process in the context of conditions found in the SYUs, before land use allocations were made to other resource activities.

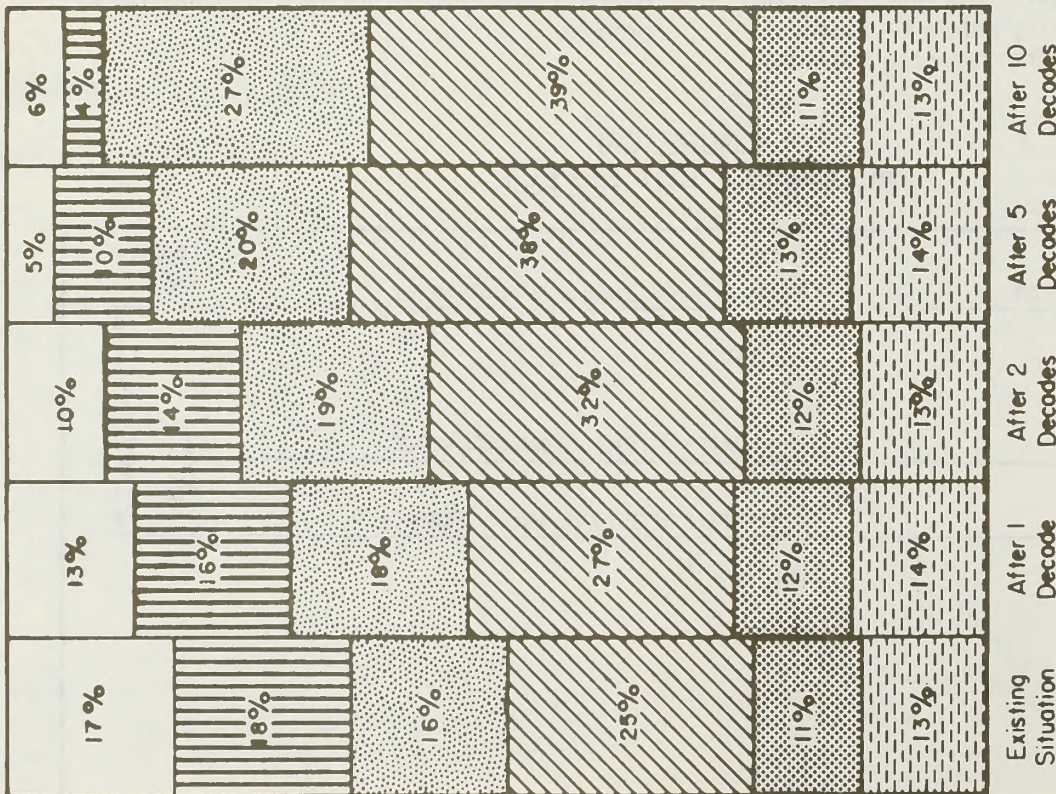
This forest is in the early to middle transition stage and, as the recent inventory found, has a relatively low average annual growth rate. An initial computation was made that assumed no intensive management practices were performed. Under this scheme, stands were projected to grow in a fashion similar to normal unmanaged forests. The lower growth curve in Figure C-1 shows the average annual growth path projected from these assumptions. When tested on the allowable cut model, it was determined that sufficient harvest age timber was available to bridge the gap until a regulated state was achieved.

Next, a high level of management was assumed. Practices (see Chapter 1, Forest Management Treatments and Design Elements) such as genetic improvement, precommercial and commercial thinning, fertilization and mortality salvage were used in projecting yield functions. The basis for most of these projections was the DFIT model. The higher growth curve in Figure C-1 shows the average annual growth path resulting from the intensive management assumptions. When tested on the allowable cut model, it was determined that there was only enough harvest age timber available to take credit for a portion of the expected future growth increases. For full ACE credit to apply, there must be enough harvestable timber to bridge the previously mentioned time gap. Since this was not the case in the Eugene SYUs, the allowable cut effect applied was limited to about 33 percent of the projected potential allowable cut effect. To set a cut level higher than the "actual" would cause a drop in future cut levels, a violation of Bureau policy. Essentially, the limited volume of standing harvest age timber has built a conservative factor into the computation process.

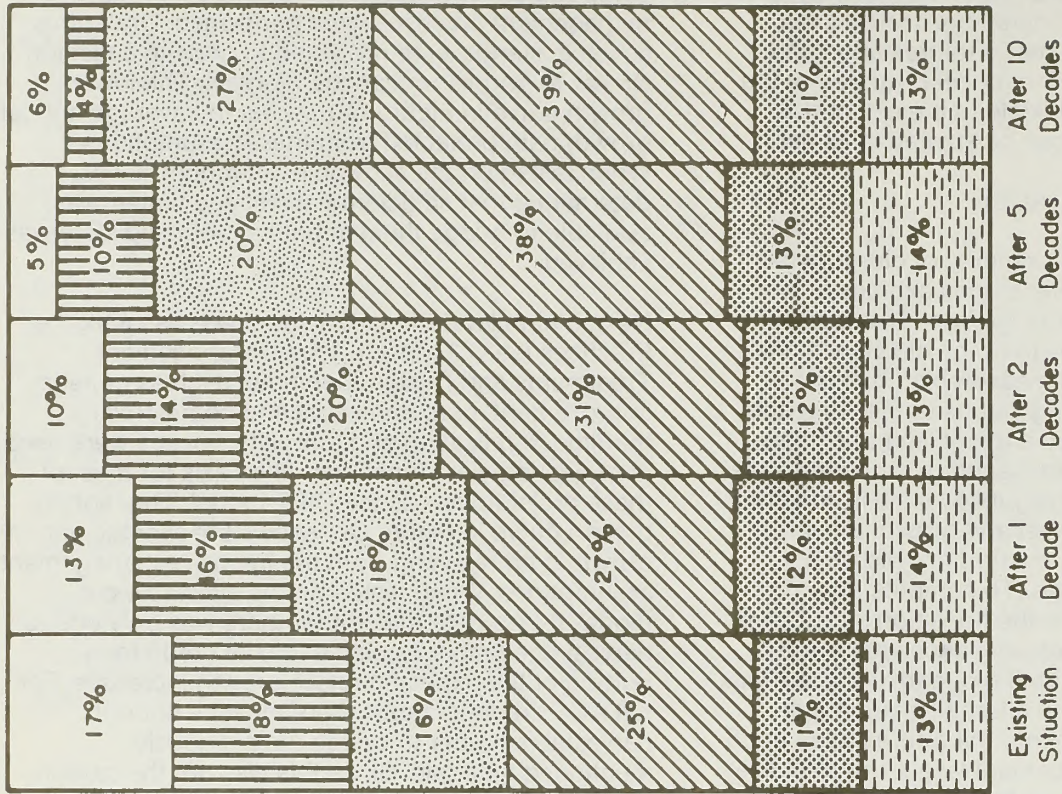
FIGURE C-1
ALLOWABLE CUT EFFECT



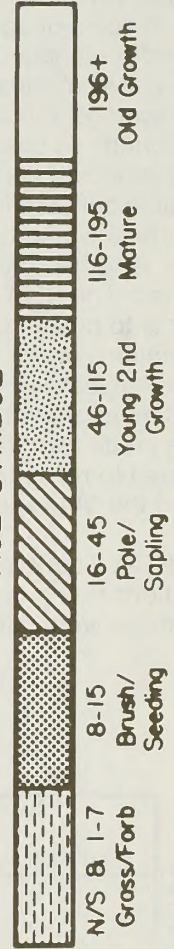
ALTERNATIVE 1



ALTERNATIVE 2

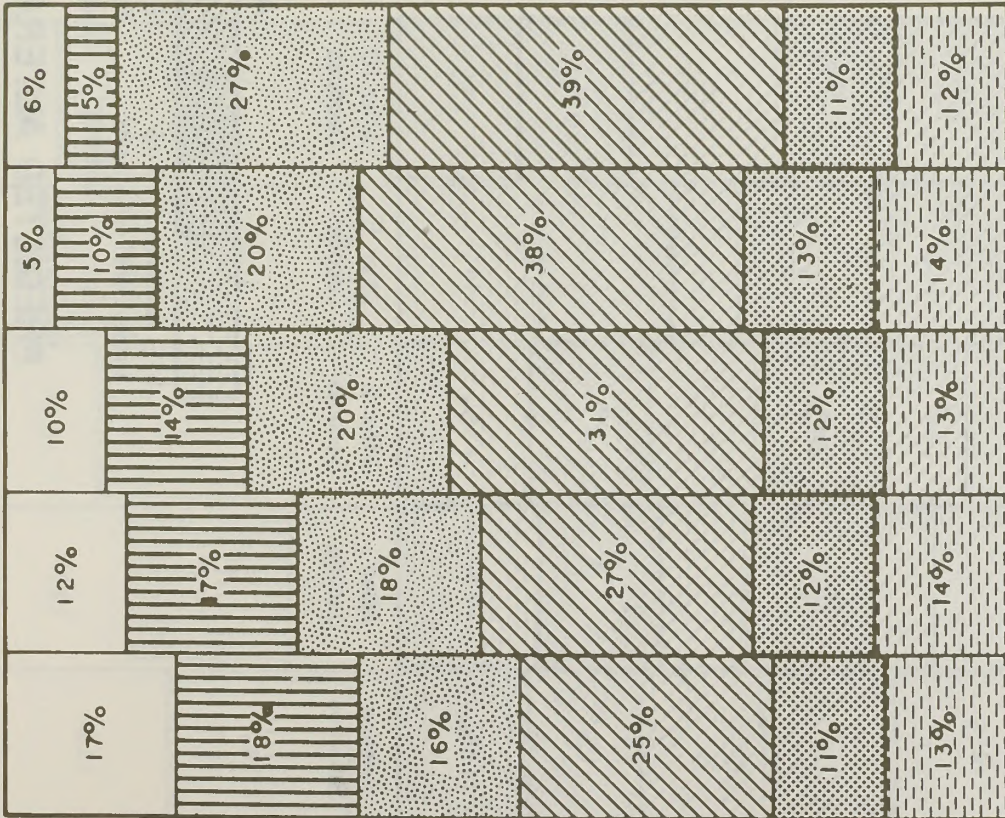


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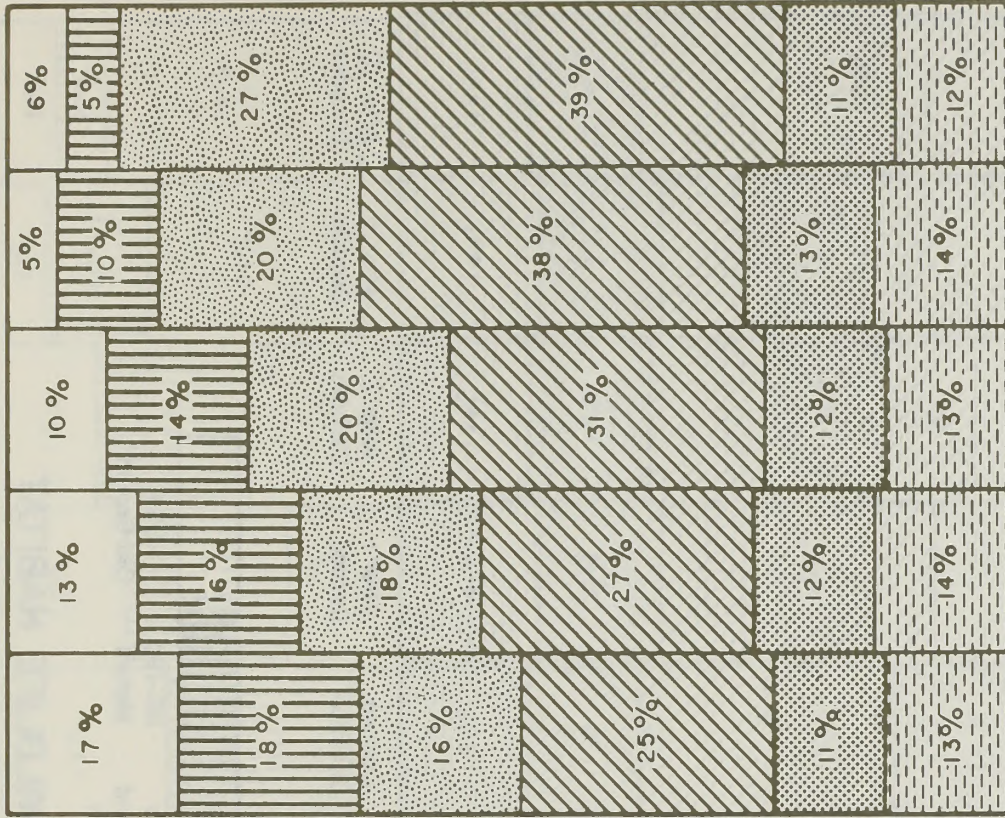


PREDICTED ALTERATION OF WILDLIFE HABITAT ON ALL FOREST LANDS IN THE EIS AREA

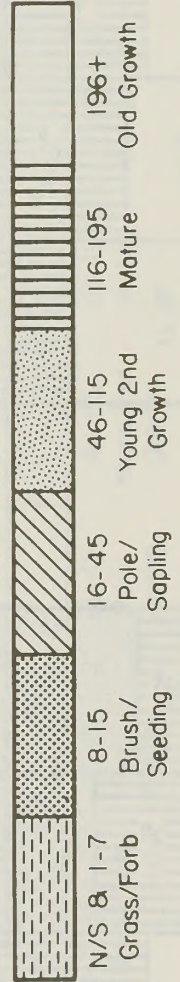
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ALTERNATIVE 4

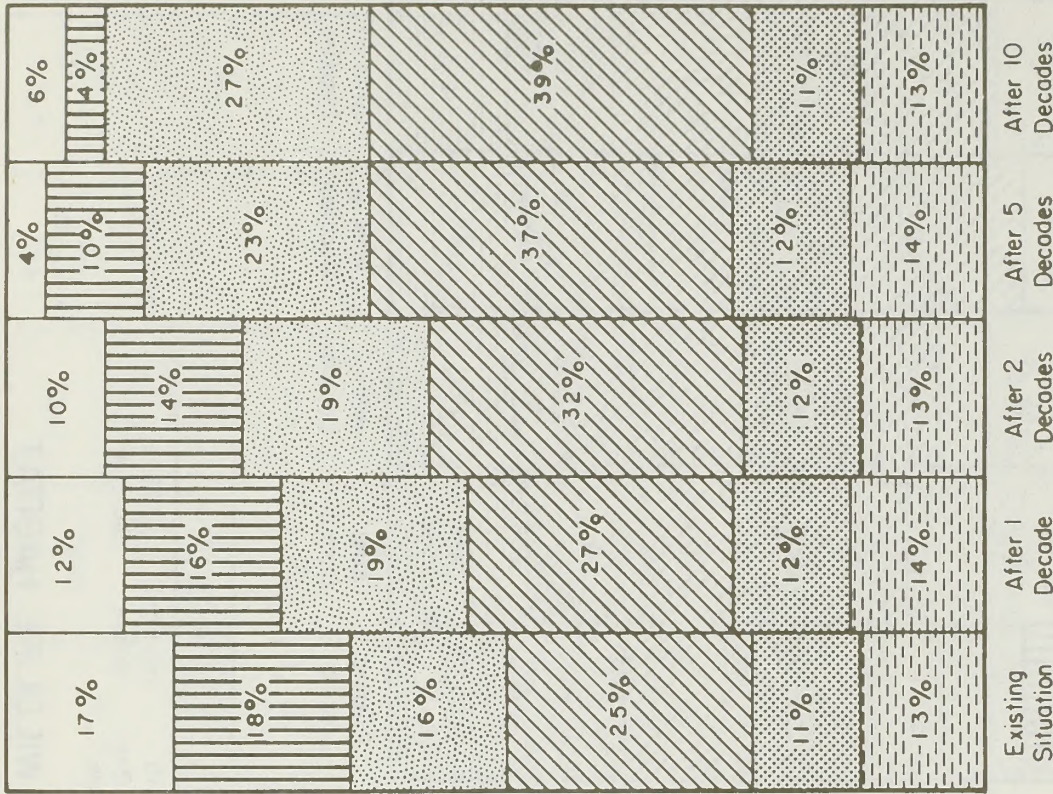


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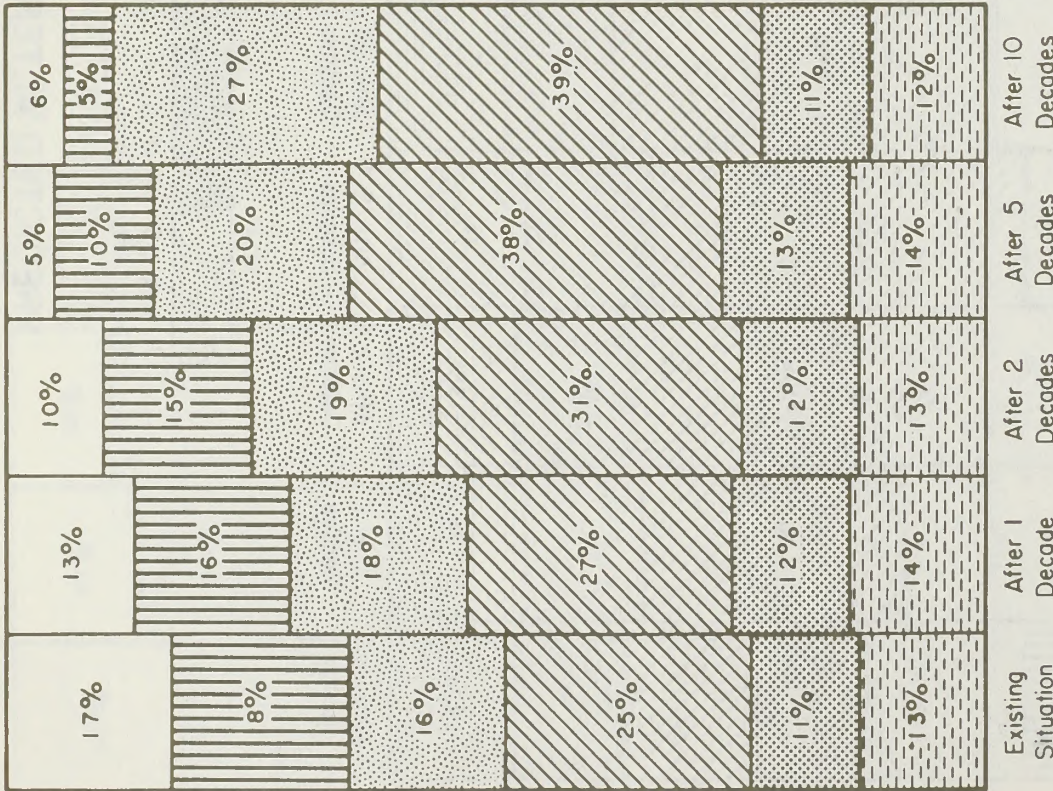


PREDICTED ALTERATION OF WILDLIFE HABITAT ON ALL FOREST LANDS IN THE EIS AREA

ALTERNATIVE 6



ALTERNATIVE 5

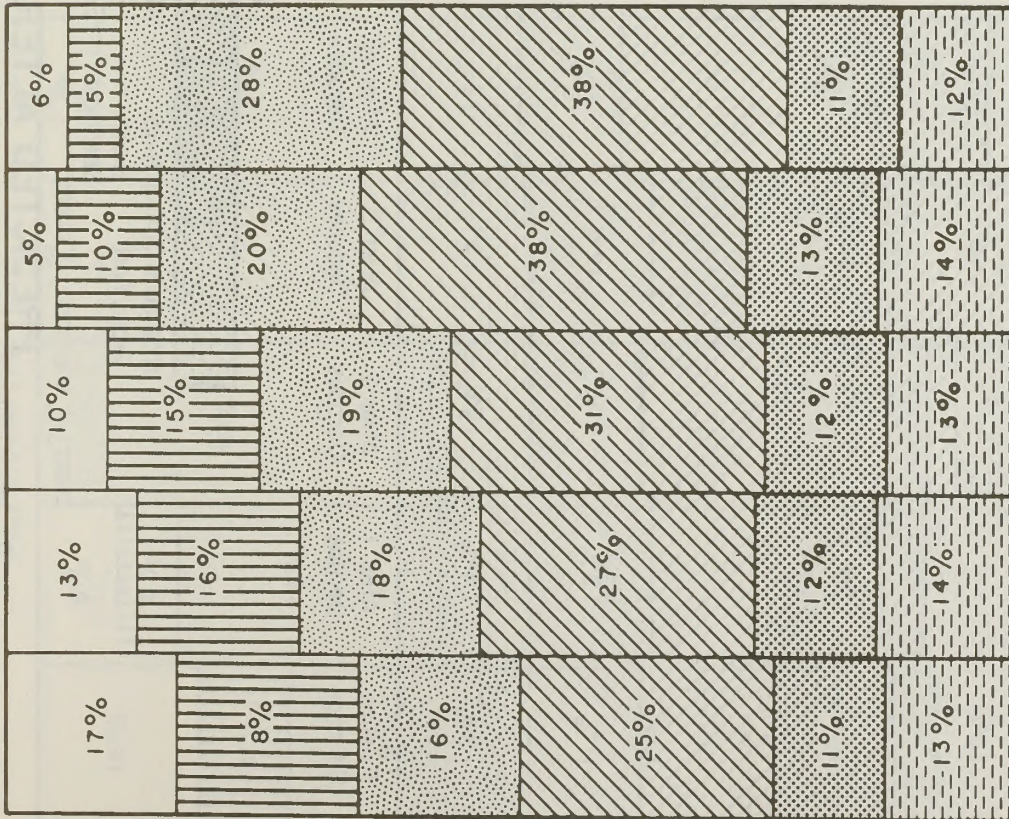


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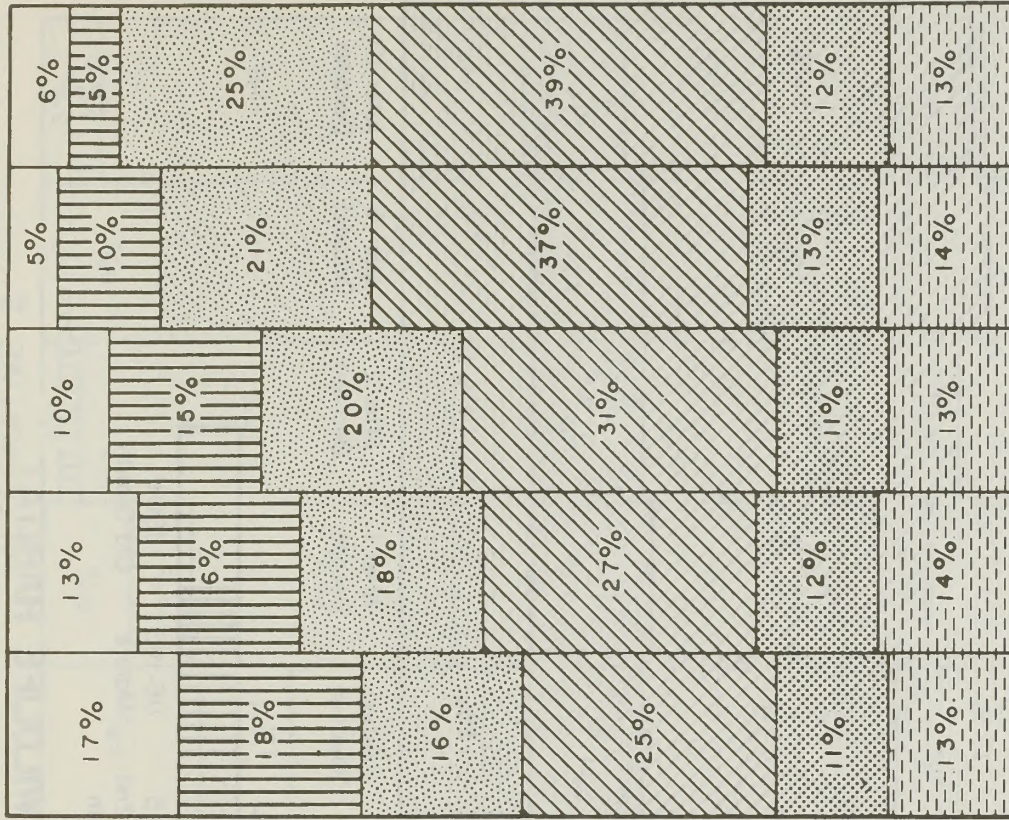


PREDICTED ALTERATION OF WILDLIFE HABITAT
ON ALL FOREST LANDS IN THE EIS AREA

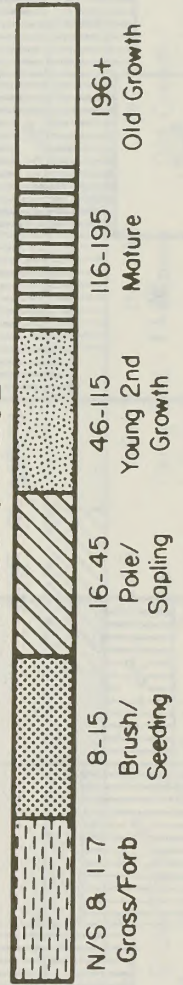
ALTERNATIVE 7



ALTERNATIVE 8

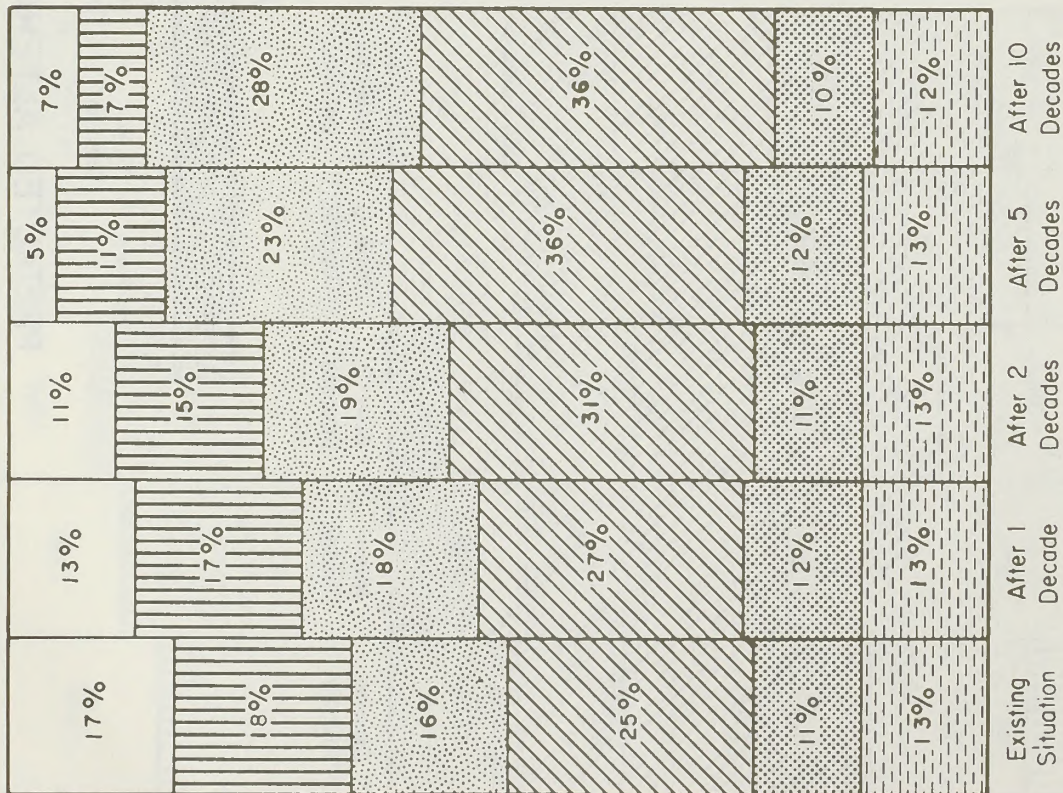


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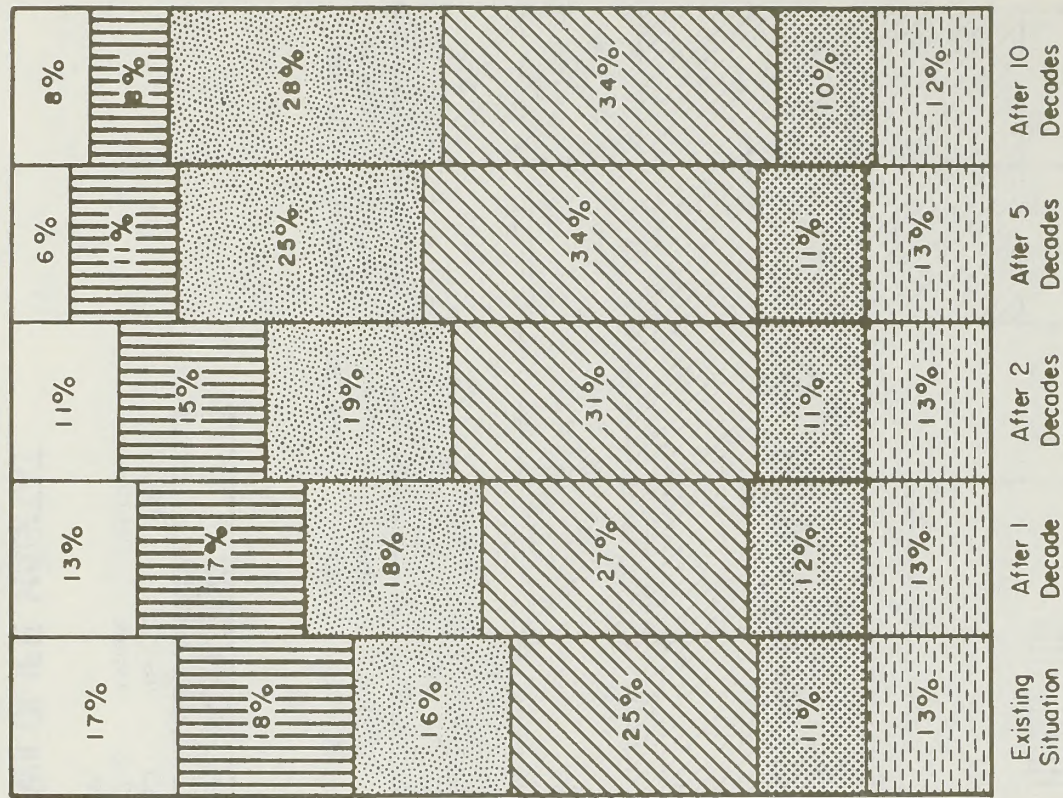


PREDICTED ALTERATION OF WILDLIFE HABITAT
ON ALL FOREST LANDS IN THE EIS AREA

ALTERNATIVE 9



ALTERNATIVE 10



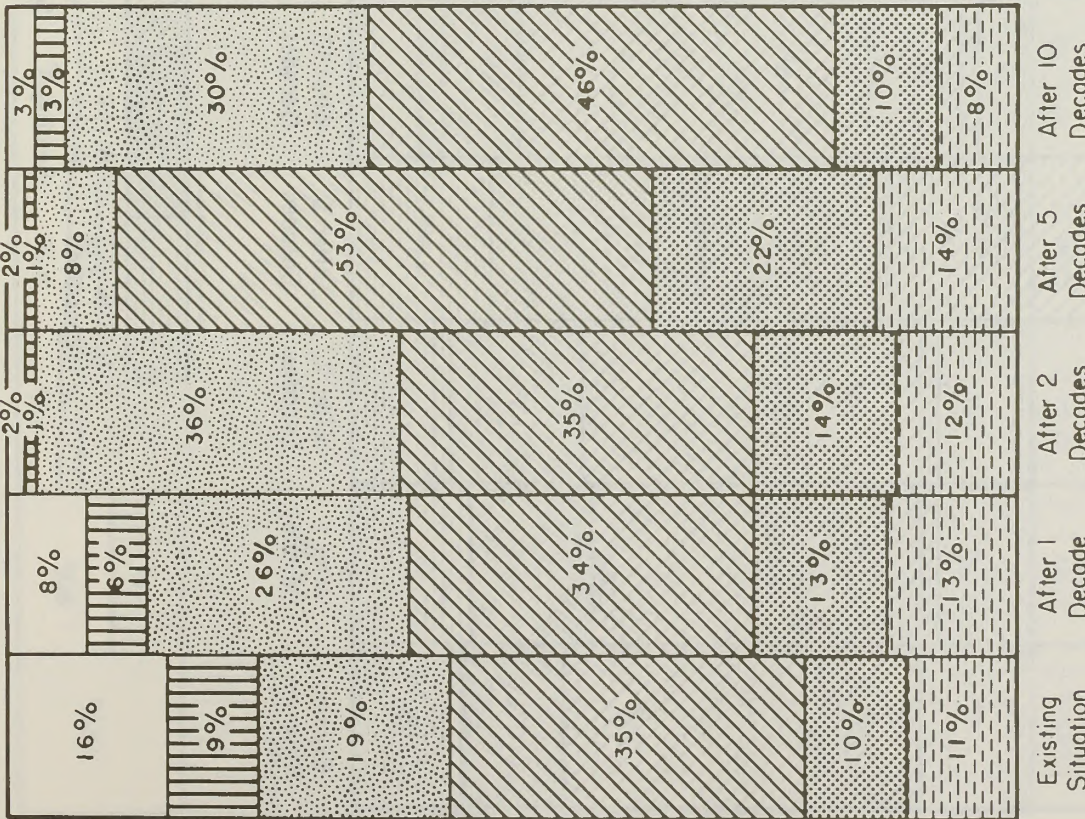
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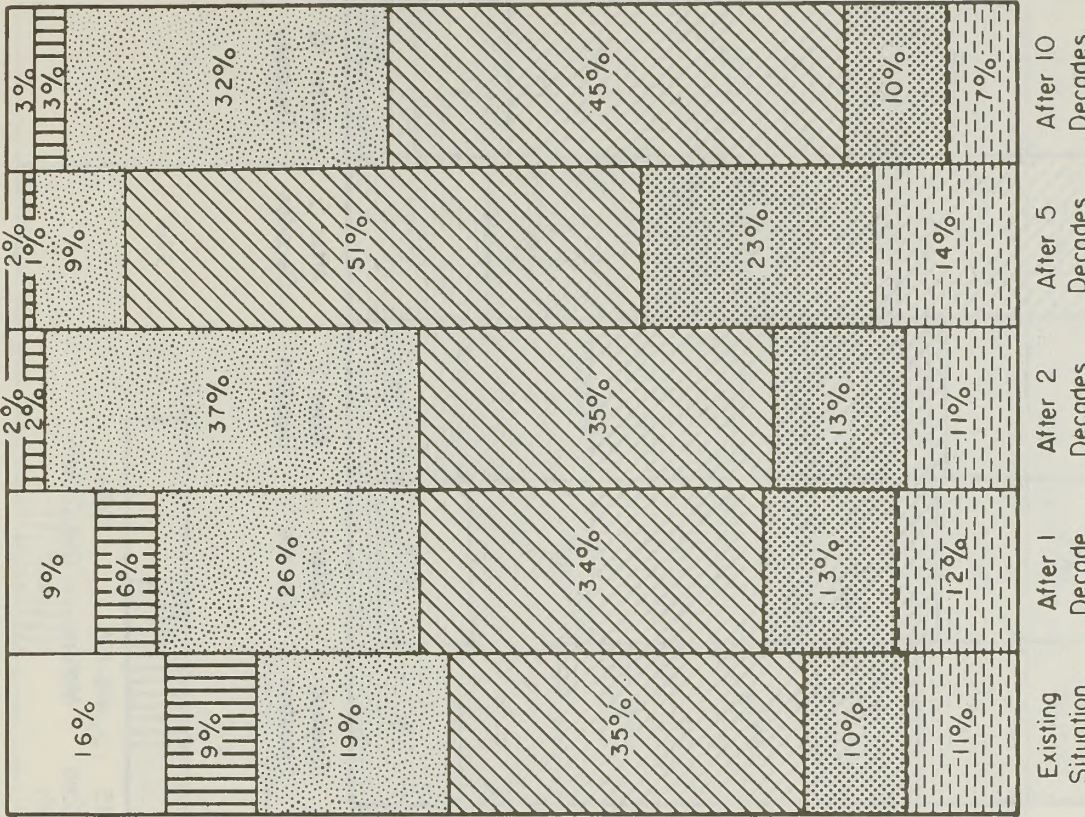
PREDICTED ALTERATION OF WILDLIFE HABITAT
ON ALL FOREST LANDS IN THE EIS AREA

APPENDIX E

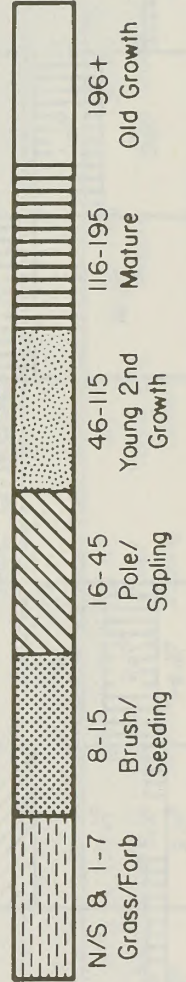
ALTERNATIVE 1



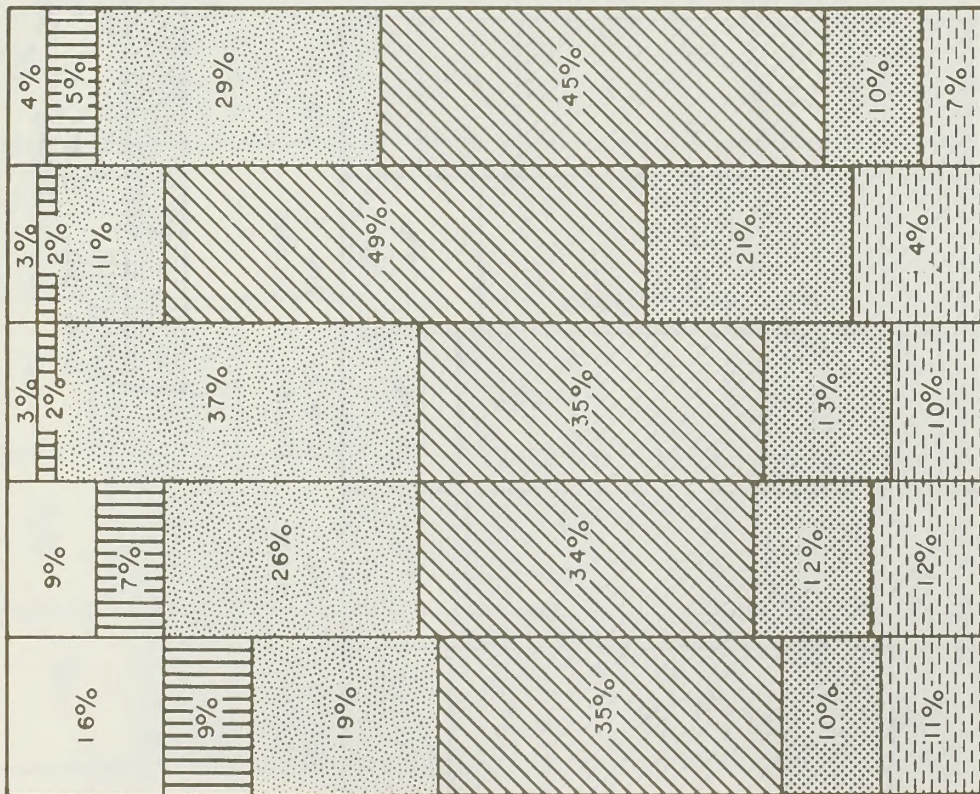
ALTERNATIVE 2



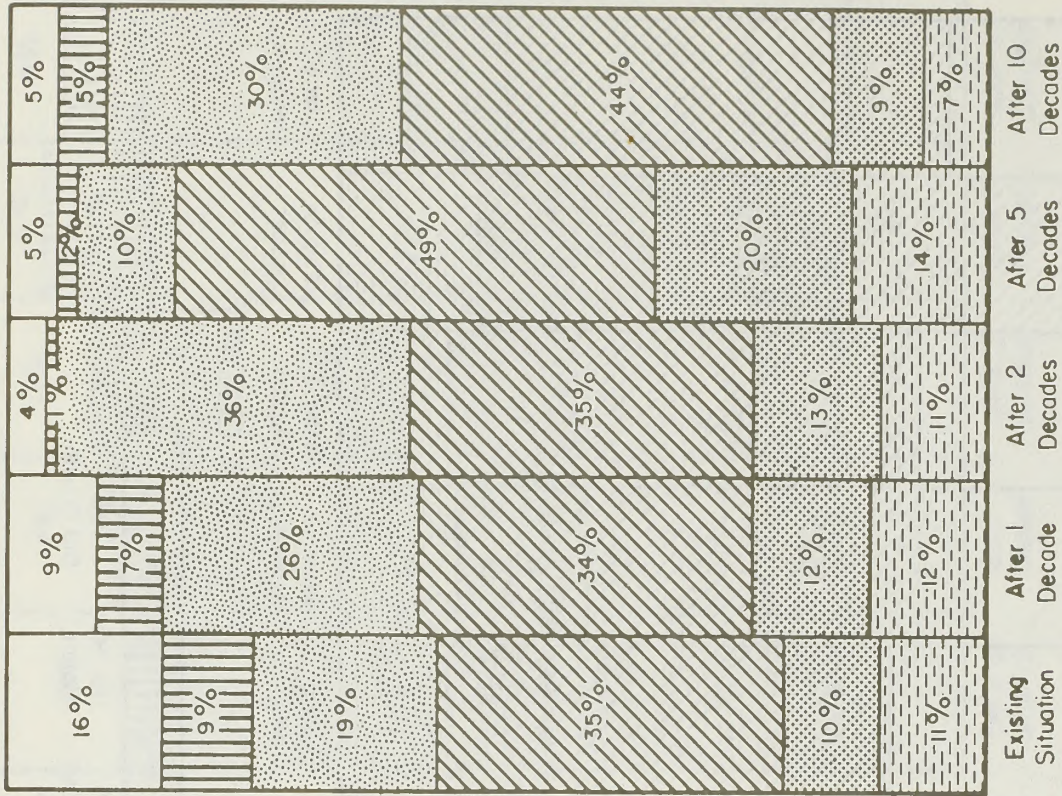
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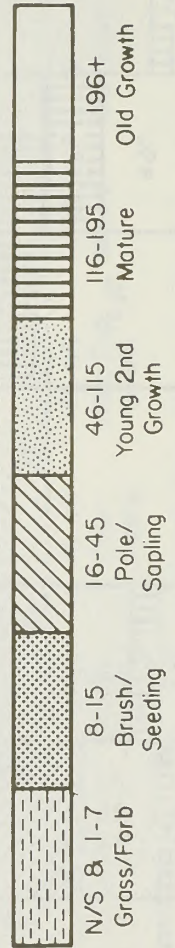
ALTERNATIVE 3



ALTERNATIVE 4

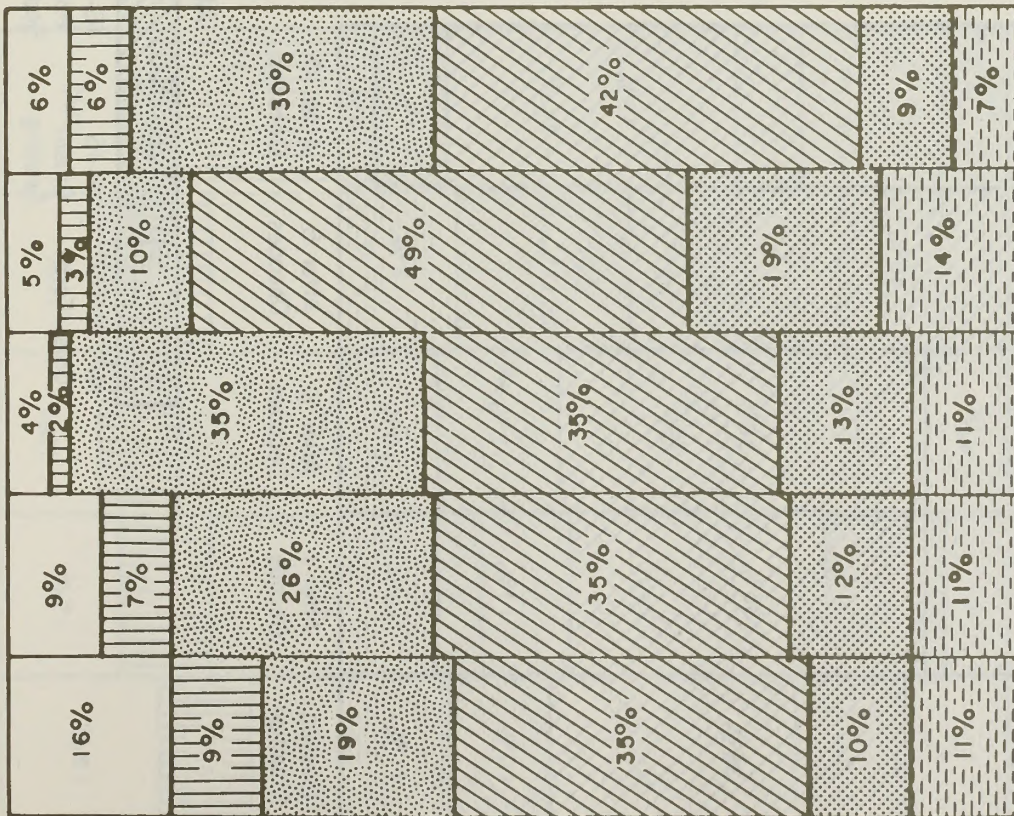


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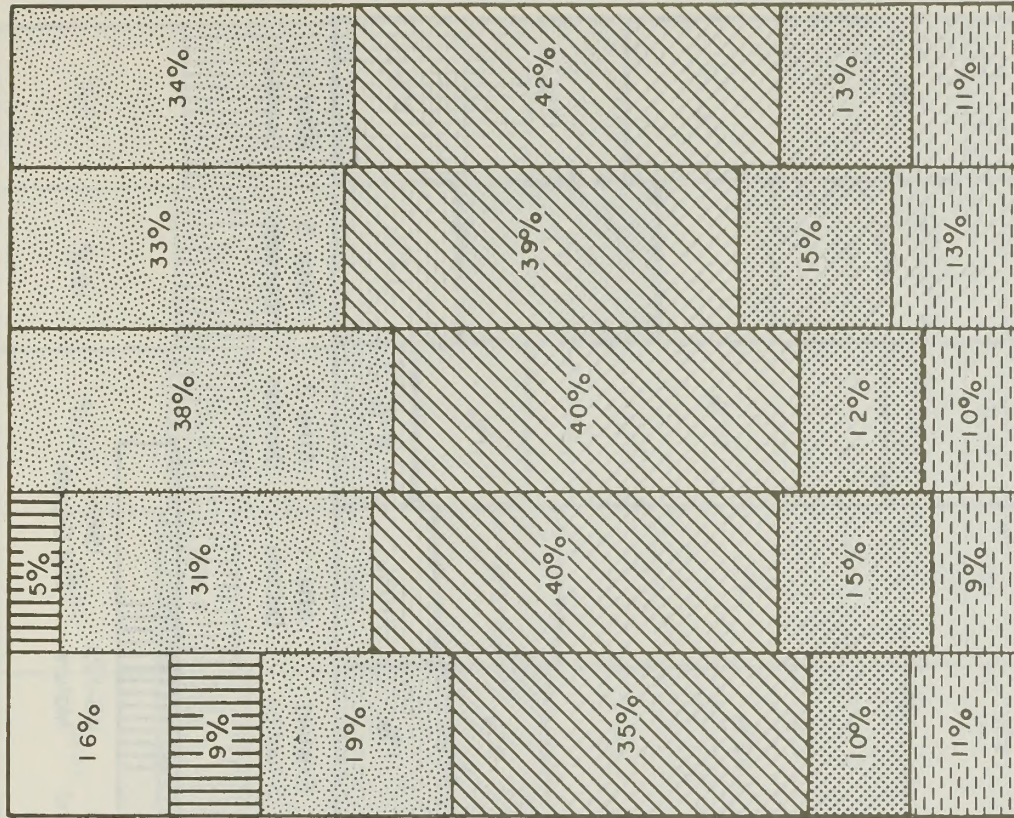


ALTERATION OF WILDLIFE HABITAT ON BLM-ADMINISTERED FOREST LAND

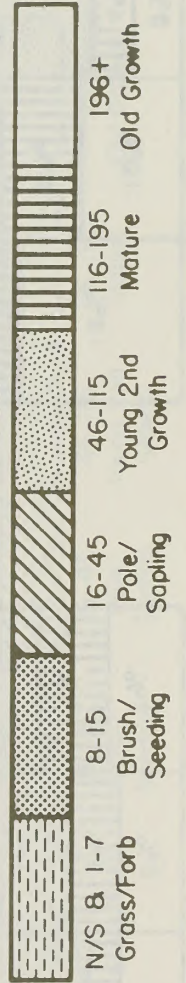
ALTERNATIVE 5



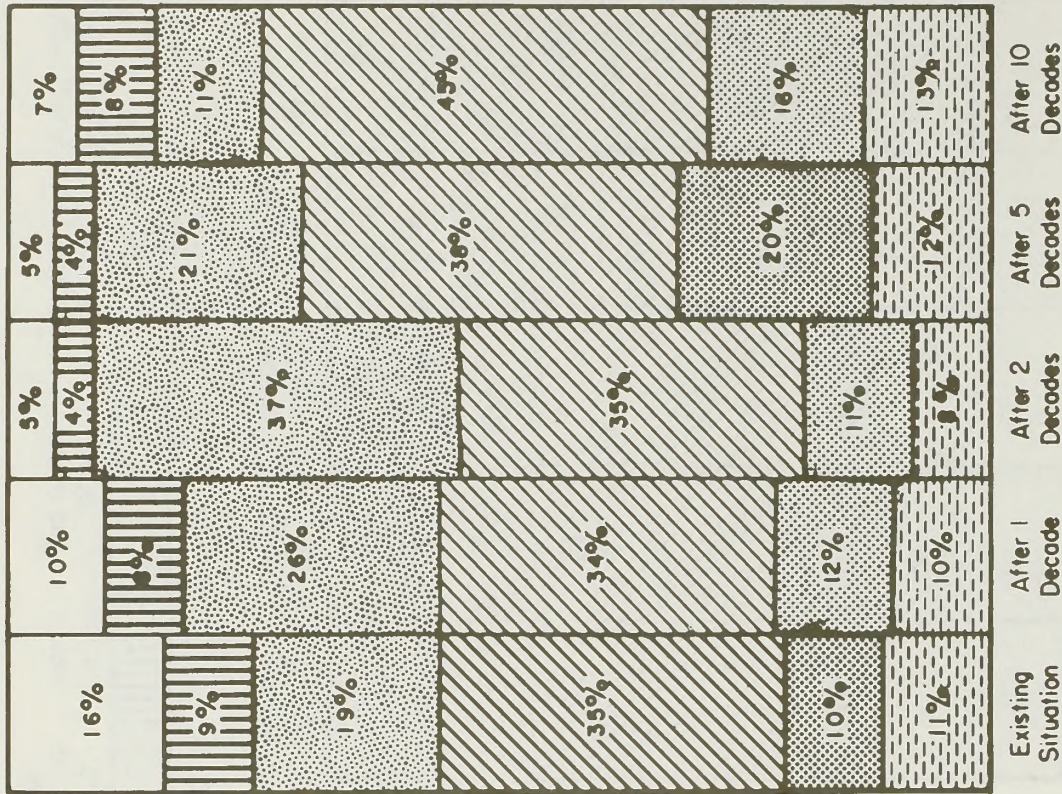
ALTERNATIVE 6



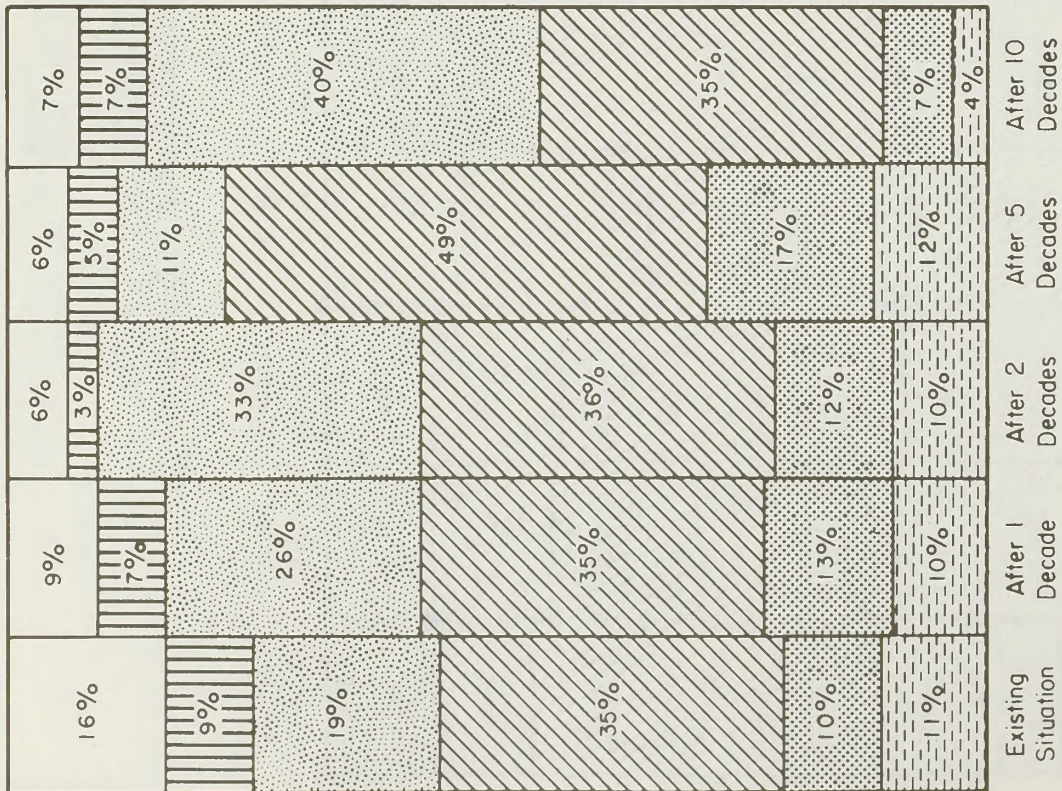
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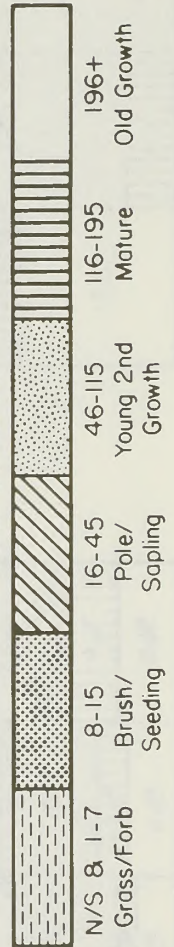
ALTERNATIVE 8



ALTERNATIVE 7

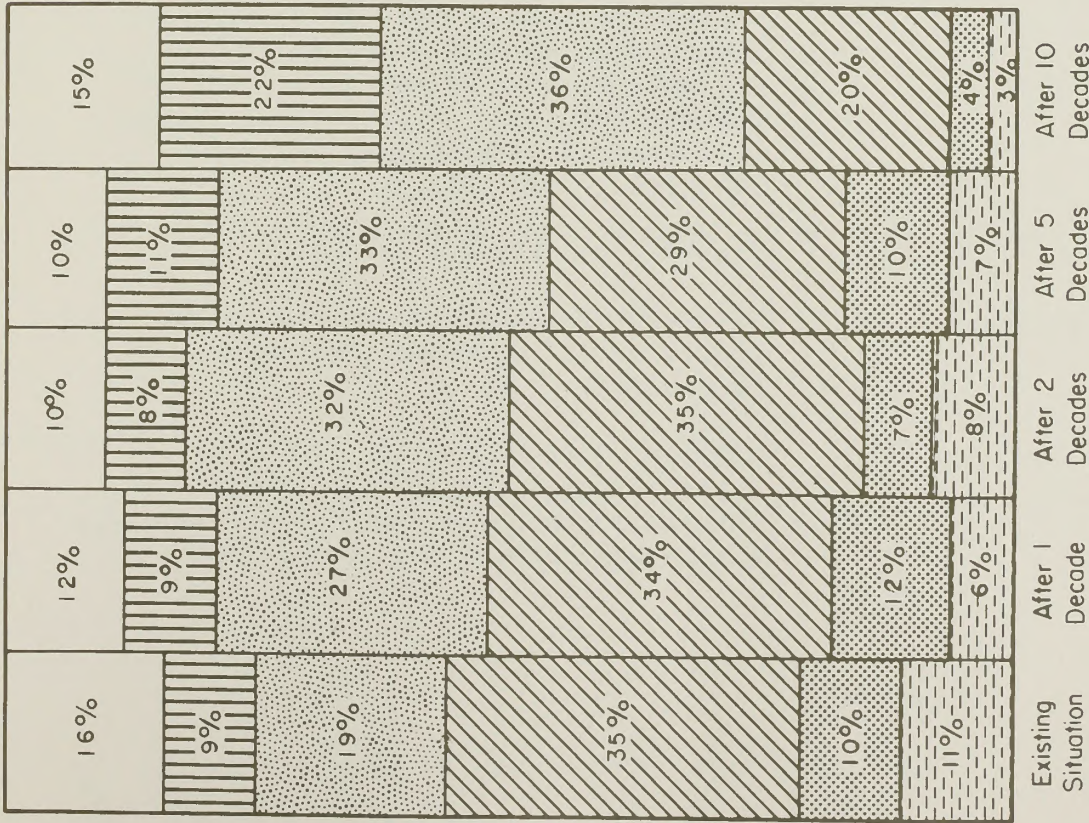


AGE SYMBOL

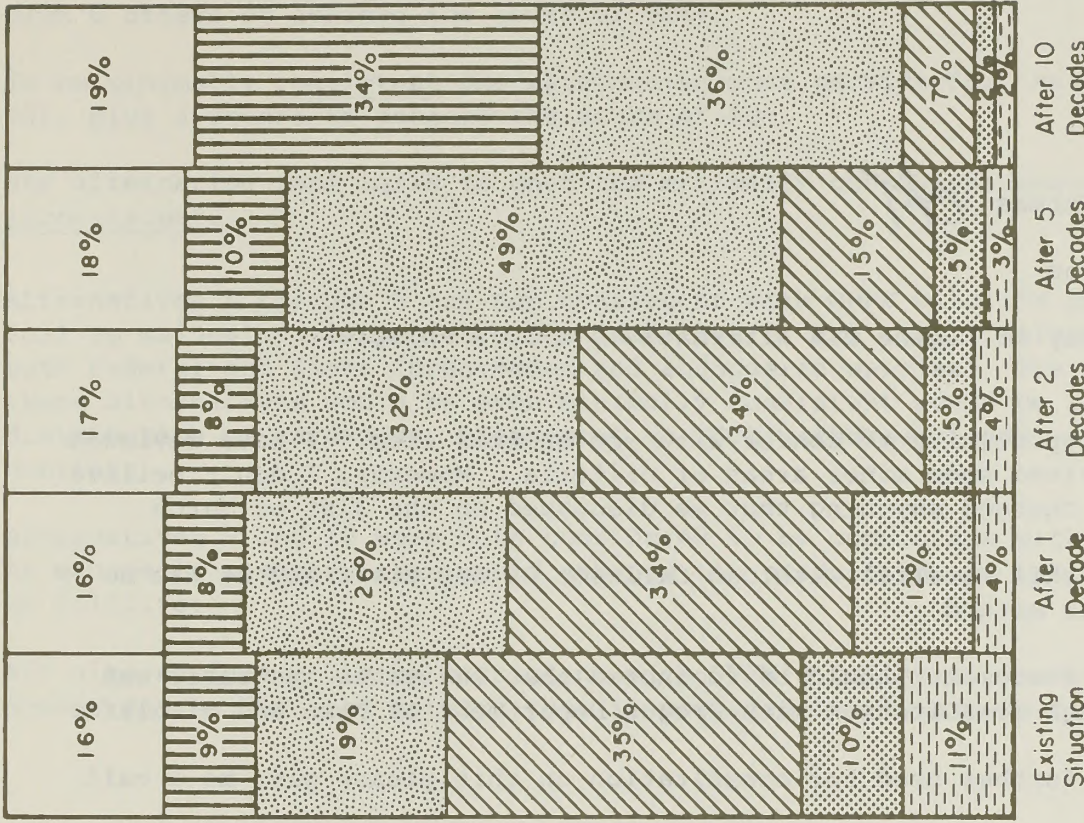


ALTERATION OF WILDLIFE HABITAT ON BLM-ADMINISTERED FOREST LAND

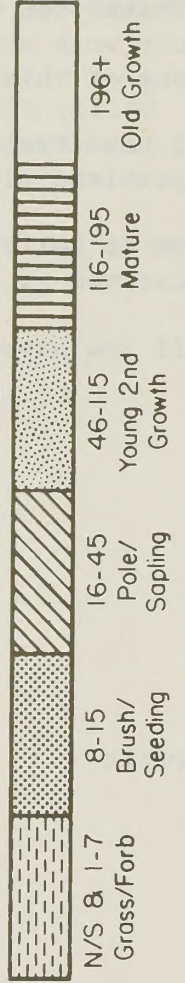
ALTERNATIVE 9



ALTERNATIVE 10



AGE SYMBOL



ALTERATION OF WILDLIFE HABITAT ON BLM-ADMINISTERED FOREST LAND

Appendix F
DEPARTMENT FISH AND
WILDLIFE

MEMORANDUM

DATE: 4/6/83

TO: Charlie Thomas *CT*

FROM: Paul Ingram

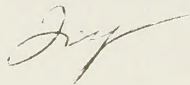
SUBJECT: Consistency of Eugene BLM Alternatives w/ODFW Policies

Thanks for the opportunity to confer with you on this item. I have reviewed our work and revised some minor areas of criteria. However, I don't believe any of this has changed anything that we discussed on the 31st of March.

I have reviewed this material with Dan Carleson of our staff and he has no problems with our method.

We do believe a statement should be footnoted that indicates the table was arrived at through consultation with Oregon Department of Fish and Wildlife.

If you have any further need for consultation on this please give me a call.



pi/lz

In order to be consistent the alternative must provide for the required items (3), plus 6 others or achieve the score of 90%+.

To be minimally consistent the alternative must provide for the required items (3), plus 3 others to achieve the score of 60+.

Any alternative that fails to meet the minimally consistent score (60) is inconsistent.

Alternatives 1 through 8 are not consistent with ODFW wildlife goals since they fail to maintain all species at optimum levels, and their failure to protect both Federal and State threatened and endangered species. The only areas where these alternatives would be even minimally consistent would be in the amount and distribution of hardwoods, management on TPCC withdrawn lands, and on non-forest habitats.

Alternatives 9 and 10 were both considered to be consistent with ODFW's policy to manage in a manner that would enhance the production and public enjoyment of wildlife.

All alternatives would be consistent with ODFW's policy to develop and maintain access due to the road network that is provided in all alternatives.

Consistency Criteria for
Oregon Department of Fish and Wildlife Policies

ITEM	CRITERIA	MAXIMUM SCORE
(1) Eagles	Protects (1) existing nest/root site and 23 potential sites per eagle recovery plan. (Required)	10
(2) Older Forest Habitat (Spotted Owl as indicator)	Maintains 23 pair within distributional pattern as per Interagency plan. Meet 1000 acre criteria for each pair. Maintain East-West Corridor concept to tie distribution pattern between Coast and Cascade ranges. (Required)	10
(3) Elk	Maintains elk habitat at or above, Current levels in selected management areas (eg Alma to Austa).	10
(4) Accipiters	Maintains habitat at or above 40% of potential.	10
(5) Cavity users	Develops habitat to at least 60% of potential.	10
(6) Hardwood Habitat (diversity)	Maintain present and future levels by retaining at least 10% stocking of naturally occurring species, and 10% stocking of naturally occurring "minor" conifer species in reforestation areas.	10
(7) Riparian	Provide maximum protection on riparian zones along all 3rd order and larger streams. Meet or exceed water quality standards on 1st and 2nd order streams by increased buffering and extended rotation. (Required)	10
(8) TPCC-withdrawn lands	Manage primarily for wildlife	10
(9) Non-Forest Habitats	Protects all interspersed non-forest habitats and surrounding ecotones from damage.	10
(10) Additional Older Forest Habitat	Provide small blocks (50-100 acre) of older forest (120+ age) at 1-mile intervals connecting spotted owl habitats within and outside district boundaries.	10

GLOSSARY OF TERMS

LONG TERM RATING SHEET

Eugene BLM Alternatives to ODFW Policies

SCORES BY ALTERNATIVE

CRITERIA #	1	2	3	4	5	6	7	8	9	10
1 (R)	0	0	0	0	0	0	0	0	10	10
2 (R)	0	0	0	0	0	0	0	0	10	10
3	0	0	0	0	0	0	0	0	10	10
4	0	0	0	0	0	0	0	0	10	10
5	0	0	0	0	0	0	0	0	10	10
6	0	0	0	0	0	0	0	10	10	10
7 (R)	0	0	10	10	10	10	10	10	10*	10*
8	5	5	10	10	10	10	10	10	10	10
9	5	5	10	10	10	10	10	10	10	10
10	0	0	8	0	0	0	8	8	10	10
TOTAL SCORE	10	10	30	30	30	30	38	48	100	100

INCONSISTENT

CONSISTENT

* = Max protection

All other numbers in riparian (7) are very liberal 10's

SHORT TERM RATING SHEET

Eugene BLM Alternatives to ODFW Policies

CRITERIA #	SCORES BY ALTERNATIVES									
	1	2	3	4	5	6	7	8	9	10
1 (R)	0	0	0	0	0	0	0	0	0	0
2 (R)	0	0	0	0	0	0	0	0	10	10
3	0	0	0	0	0	0	0	0	10	10
4	0	0	0	0	0	0	0	0	10	10
5	0	0	0	0	0	0	0	0	8	10
6	10	10	10	10	10	10	10	10	10	10
7 (R)	0	0	10	10	10	10	10	10	10*	10*
8	5	5	10	10	10	10	10	10	10	10
9	5	5	10	10	10	10	10	10	10	10
10	0	0	8	0	0	0	8	8	10	10
TOTAL SCORE	20	20	48	40	40	40	48	48	98	100
INCONSISTENT										CONSISTENT

* = Max protection

All other numbers in riparian (7) are very liberal 10's

GLOSSARY OF TERMS

Absorb - To be held within the structure of a substance.

Acre-foot - The volume of water that will cover 1 acre to a depth of 1 foot.

Adsorption - The adhesion of substances to the surfaces of solids.

Allowable Cut - The amount of forest products that may be harvested annually or periodically from a specified area over a stated period in accordance with the objectives of management.

Allowable Cut Effect (ACE) - The immediate increase in today's allowable cut which is justified by expected future increases in yields due to present or proposed management treatments.

Allowable Cut Determination Process - A process which deals with the steps involved in the development and evaluation of alternative levels of timber production for the purpose of establishing an allowable cut.

Ambient - Surrounding, on all sides; for air, refers to any unconfined portion of the atmosphere.

Anadromous Fish - Fish which migrate from the sea to breed in fresh water. Their offspring return to the sea.

Aquifer - A geologic formation or structure that transmits water in sufficient quantity to supply the needs for a water development; usually saturated sands, gravel, fractures, and cavernous and vesicular rock. The term water-bearing is sometimes used synonymously with aquifer when a stratum furnishes water for a specific use.

Archeological Resources - All evidences of past human occupations other than historical documents, which can be used to reconstruct the lifeways of past peoples. These include sites, artifacts, environmental data and all other relevant information.

Area of Critical Environmental Concern (ACEC) - An area within the public lands where special management attention is required (when such areas are developed or used, or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural systems or processes, or to protect life and safety from natural hazards (FLPMA Sec. 103(a)).

Aspect - The direction a slope faces.

Average Employment - The sum of number of employees, reported monthly, divided by twelve; because employment is reported for all employees working during the reporting week of each month, it is a modest under-estimate of full-time equivalent employment.

Background - That portion of an area being viewed beyond the foreground-middleground (3 to 5) miles to a maximum of about 15 miles from a travel route, use area, or other observer position.

Background Levels - Amounts of pollutants present from natural sources and from human disturbances which have reached equilibrium.

Basal Area - The area of the cross-section of a tree stem near its base, generally at breast height and inclusive of bark. It is usually expressed as square feet per acre.

Bedload - The sediment that moves by sliding, rolling or bounding, on or very near, the streambed.

Biome - The largest land community unit (plant and animal) which is convenient to recognize.

Board Foot - A unit of solid wood, 1-foot square and 1-inch thick.

British Thermal Unit (BTU) - A unit of heat equal to 252 calories; quantity of heat needed to raise the temperature of one pound of water from 62 °F. to 63 °F.

Broadcast Burning - Intentional burning in which fire is intended to spread over all of a specific area. It may or may not qualify as prescribed burning.

Bucking - Cutting trees into log lengths.

Buffer Strip - A protective area adjacent to an area requiring special attention or protection.

Bureau Planning System - A process used in the BLM to establish land use allocations, constraints, and objectives for various categories of public land use.

Characteristic Landscape - The established landscape within a physiographic province. The term does not necessarily mean "naturalistic character." It could refer to farm lands, timber lands or other landscapes which exhibit both physiographic and land use similarities.

Clearcutting - A method of timber harvesting in which all trees, merchantable or unmerchantable, are cut from an area.

Commercial Forest Land - Forest land that is now producing or is capable of producing at least 20 cubic feet per acre per year of commercial coniferous tree species.

Commercial Thinning - Partial cuttings made in merchantable stands (40-70 years old) in order to stimulate the growth of remaining trees and increase total yield from the stand.

Community Income Effect - The sum of direct and indirect personal income generated by a change, e.g., timber harvest. Indirect personal income results from economic activity stimulated in other local enterprises by purchase of goods and services, primarily of a support nature.

Constrained Timber Production Base - Base Acreage managed for timber production at a lesser intensity in consideration for other resource management objectives, i.e., minimum harvest age of 350 years for wildlife habitat (see Intensive Timber Production Base).

Contrast - The effect of a striking difference in the form, line, color or texture of the landscape features within the area being viewed.

Contrast Rating System - A method of determining the extent of visual impact for an existing or proposed activity that will modify any landscape feature (land and water form, vegetation and structures).

Coos Bay Wagon Road (CBWR) Lands - Public lands granted to the Southern Oregon Company and subsequently reconveyed to the United States.

Critical Habitat - That habitat considered by the Secretary of the Interior to be necessary to the normal needs or survival and recovery of listed Threatened or Endangered Species. It may also include habitat not currently occupied into which a listed species could expand.

Cull - A tree or log which is rejected because it does not meet certain specifications.

Cultural Resources - Those fragile and nonrenewable remains of human activity, occupation, or endeavor, reflected in districts, sites, structures, buildings, objects, artifacts, ruins, works of art, architecture, and natural features, that were of importance in human events. These resources consist of (1) physical remains, (2) areas where significant human events occurred--even though evidence of the event no longer remains, and (3) the environment immediately surrounding the actual resource. Cultural resources, including both prehistoric and historic remains, represent a part of the continuum of events from the earliest evidences of man to the present day.

Debris Avalanche - Fast moving failures of shallow, generally cohesionless soils on steep slopes over an impermeable failure surface.

Debris Torrent - A very fluid mass of soil, rock and vegetative debris that moves rapidly down steep, narrow stream channels.

Discharge - Rate of flow of a fluid, the volume of fluid passing a point per unit of time, commonly expressed as cubic feet per second (cfs), million gallons per day, gallons per minute, or cubic meters per second.

Distance Zone - The area that can be seen as foreground-middleground, background, or seldom-seen.

Ecosystem - An ecological unit consisting of both living and nonliving components which interact to produce a natural, stable system.

Environmental Assessment (EA) - A systematic environmental analysis of site-specific BLM activities used to determine whether such activities have a significant affect on the quality of the human environment and whether a formal environmental impact statement is required.

Environmental Impact Statement (EIS) - A formal document to be filed with the Environmental Protection Agency that considers significant environmental impacts expected from implementation of a major Federal action.

Epiphytic - A plant growing on another plant.

Erosion (soil) - Removal of soil from its place of origin to a point of deposition other than a stream channel.

Even Flow - Maintaining a relatively constant undiminishing supply of timber from year to year for the planning cycle.

Fauna - All the animals in a given area.

Final Harvest Cut - Constitutes removal of a mature stand, either through clear cutting, the final stage of a shelterwood regime, or overstory removal.

Flora - All the plants in a given area.

Forbs - Herbaceous plants; most often used pertaining to herbaceous plants eaten by wildlife.

Foreground-middleground - The area visible from a travel route, use area, or other observer position to a distance not exceeding 5 miles. The outer boundary of this zone is defined as the point where the texture and form of individual plants are no longer apparent in the landscape. Vegetation is apparent only in patterns or outline.

Forest Canopy - The more or less continuous cover of branches and foliage formed collectively by the crowns of adjacent trees and other woody growth.

Forest Land - Land that is now, or is capable of becoming, at least 10 percent stocked with forest trees and that has not been developed for nontimber use.

Forest Management Program - Includes timber activity plan and all forest resource related program activity plans.

Forest Type Island - An aggregation of trees occupying a specific area and sufficiently uniform in composition, age, arrangement and condition to be distinguishable from vegetation on adjoining areas.

Groundwater - Subsurface water in the zone of saturation.

Growing Stock - The amount of standing, green timber retained to produce forest products; also known as forest capital.

Habitat - The environment in which an organism occurs.

High-lead Logging - A cable yarding system in which lead blocks are hung on a spar or tower to provide lift to the front end of logs giving partial suspension.

Historic Resources - All evidences of human activity that date from historic (i.e., recorded history) periods. These resources include documentary data (i.e., written records, archival material, photographs, maps, etc.), sites, artifacts, environmental data, and all other relevant information. Also included are locations where documented historical events took place, even though no physical evidence of the events remain other than the setting. Historic resources are cultural resources and may be considered archeological resources when archeological work is involved in their identification and interpretation.

Igneous Rock - Rock formed from the cooling and solidification of molten rock.

Infiltration (soil) - Downward entry of water into the soil.

Intensive Forest Management Lands - All commercial forest land that is part of the timber production base for allowable cut calculation in the Douglas and South Umpqua Sustained Yield Units.

Intensive Timber Production Base - Base Acreage intensively managed for timber production using a 50 year minimum harvest age in the allowable cut computation.

Intermediate Cuttings - Any removal of merchantable trees from a stand prior to the final harvest cutting, i.e., commercial thinning, sanitation/salvage, or shelterwood regeneration cuttings.

Landing - Any place on or adjacent to the logging site where logs are assembled for further transport.

Landscape Features - The land and water form, vegetation, and structures which compose the characteristic landscape.

Leach - Usually refers to the movement of chemicals through soil by water; may also refer to movement of herbicides out of leaves, stems or roots into the air or soil.

Log Flows - Destinations of harvested timber by origin. Origins used herein are management units and counties or county groupings; destinations are communities, counties or groupings of counties within which the primary processing of timber takes place.

Lumber and Wood Products, except Furniture - Defined by the Office of Management and Budget and the Standard Industrial Classification Manual as Major Group #24, which includes logging contractors engaged in cutting timber and pulpwoods; merchant sawmills, lath mills, shingle mills, planing mills, plywood mills, and veneer mills engaged in producing lumber and wood basic materials; and establishments engaged in manufacturing finished articles made entirely or mainly of wood or wood substitutes. Certain types of establishments producing wood products are classified elsewhere, e.g., furniture and office and store fixtures are classified in Major Group #25.

Management Framework Plan (MFP) - Land use plan for public lands which provides a set of goals, objectives, and constraints for a specific planning area to guide the development of detailed plans for the management of each resource.

Mass Failure - See Mass Movement.

Mass Movement - Downslope movement of soil and rock caused by gravity; may be slow (creep) or rapid (landslide, debris avalanche).

Metamorphic Rock - Rock formed from preexisting rocks but changed by heat and/or pressure to rock with new physical, chemical and mineralogical properties.

Microclimate - The climatic condition of a small area modified from the general climatic conditions by local differences in elevation or exposure.

Minimum Harvest Age - The lowest age of a stand to be scheduled for final harvest.

Mixing Height - The height above the ground through which vertical mixing of air is relatively vigorous.

Mortality Salvage - See sanitation/salvage cutting.

Multiple Use - Management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people.

National Natural Landmark - Areas designated by the Secretary of Interior which contain representative

examples of the nation's natural history, including terrestrial communities, aquatic communities, landforms, geological features or habitats of native plant and animal species, possessing national significance in illustrating or interpreting the nation's natural heritage.

National Register of Historic Places - The official list, established by the Historic Preservation Act of 1966, of the Nation's cultural resources worthy of preservation. The Register lists archeological, historic, and architectural properties (i.e., districts, sites, buildings, structures, and objects) nominated for their local, State, or national significance by State and/or Federal agencies and approved by the National Register staff. The Register is maintained by the National Park Service.

Natural Levels - Amount of pollutants present from natural sources without human disturbances which have reached equilibrium.

Non-commercial Forest Land - Land which is not capable of yielding at least 20 cubic feet of wood per acre per year from commercial species, or land which is capable of producing only non-commercial tree species.

Non-degradation Policy - Use of the highest and best practicable treatment and/or control of wastes, activities and flows to maintain water quality at the highest possible levels.

Non-forest Land - Land that has been developed for non-timber uses or land that is incapable of being 10 percent stocked with forest trees.

Non-point Source Pollution - Pollution caused by the introduction of materials from diffuse sources (e.g., sediment, nutrients), or from a natural or manmade alteration in the stream system.

O&C Lands - Public lands granted to the Oregon and California Railroad Company and subsequently reverted to the United States.

Old growth - A forest containing many large trees with large snags and numerous large, down logs. There is a multi-layered canopy of several species. Some of the older trees are beginning to show signs of decadence. Small openings are scattered throughout the forest. In western Oregon, forests begin to have old growth characteristics at about 200 years.

Old-Growth Dependent - An animal species so adapted that it can exist only in old-growth forests.

Operations Inventory - An intensive forest inventory which provides managers with information showing the location, acreage, silvicultural needs, and mortality-salvage or thinning needs within each section of public land.

Paleontology - A science dealing with the life of past geological periods as known from fossil remains.

Partial Cutting - Tree removal other than by clearcutting.

Particulates - Finely divided solid or liquid particles in the air or in an emission; includes dust, smoke fumes, mist, spray and fog.

Peak Flow - The highest amount of stream or river flow occurring in a year or for a single storm event.

Perched Water Table - The surface of a local zone of saturation held above the main body of groundwater by an impermeable layer or stratum, usually clay, and separated by the main body of ground water by an unsaturated zone.

Permeability (soil) - The quality of a soil horizon that enables water or air to move through it; may be limited by the presence of one nearly impermeable horizon even though the others are permeable.

Personal Income - The income received by all individuals in the economy from all sources; made up of wage and salary disbursements, proprietors income, rental income of persons, dividends, personal interest income, and the difference between transfer payments and personal contributions for social insurance.

Phytoplankton - Suspended, floating or weakly swimming microscopic aquatic plants.

Plankton - Organisms of relatively small size, mostly microscopic, that either have relatively small powers of locomotion or drift in the water subject to the action of waves and currents.

Plant Community - An association of plants of various species found growing together in different areas with similar site characteristics.

Plantation Release - Any action taken on an established commercial timber stand to control stand composition and promote dominance and/or growth of suitable tree species. Treatments may include mechanical or manual slashing of undesirable brush and tree species, herbicide, biological, or a combination of methods. Forest fertilization is not considered a **Release** treatment.

Plantation Stocking Maintenance - Any vegetation management action taken on an unestablished stand to promote the survival and establishment of suitable trees. Treatments may include using biological, mechanical, or manual weeding, mulching, herbicide or a combination of methods.

Precommercial Thinning - Partial cuttings made in immature stands (10-25 years) in order to stimulate the growth of remaining trees by making available increased soil moisture, thereby increasing total yield from the stand.

Prehistoric - Pertaining to that period of time before written history.

Progeny Site - A test area for evaluating parent seed trees by comparing the performance of their offspring seedlings.

Protection - Any action taken to protect suitable trees from adverse elements such as weather, animals, insects, and disease. Treatments include all practices which increase chances for survival and normal growth of desired tree species.

Public Lands - Any land and interest in land owned by the United States within the several States and administered by the Secretary of the Interior through the Bureau of Land Management. May include public domain, O&C or acquired lands in any combination.

Public Domain Lands - Original holdings of the United States never granted or conveyed to other jurisdictions.

Recharge - Process by which water is added to the zone of saturation, as in recharge of an aquifer.

Recreation Experience Opportunity - The opportunity for a person to realize predictable psychological and physiological outcomes from engaging in a specific recreation activity within a specific setting.

Recreation Opportunity Setting - Combination of physical, biological, social, and managerial attributes present on a particular land area which influences the experience obtained by engaging in a specific recreation activity.

Reforestation - Reestablishment of a tree crop on forest land.

Regeneration - The renewal of a commercial tree crop, whether by natural or artificial means; also, the young crop itself.

Regeneration Period - The time it takes for a new commercial timber stand to become stocked following the date of a timber sale.

Regulated Forest - A forest comprised of a desired (usually even) distribution of age classes or tree sizes, when the growth equals the cut (at the highest level sustainable) and when the level of growing stock remains relatively constant.

Research Natural Areas - Areas established and maintained for research and education. The general public may be excluded or restricted where necessary to protect studies or preserve research natural areas. Lands may have: (1) Typical or unusual faunistic or floristic types, associations, or other biotic phenomena, or (2) characteristic or outstanding geologic, pedologic or aquatic features or processes.

Riparian Habitat - Those areas where the vegetation complex and microclimate conditions are products of the combined presence and influence of perennial and/or intermittent water, associated high water tables and soils which exhibit some wetness characteristics. Includes riparian zones plus one-half the transition zone (or ecotone) between riparian zones and upland habitat. (Inst. Memo OR-80-243.)

Riparian Zone - An area identified by the presence of vegetation that requires free or unbound water or conditions normally found in the area. (Thomas et al. 1979 and Inst. Memo OR-80-243.)

Runoff - That part of precipitation, as well as any other flow contributions, which appears in surface streams, either perennial or intermittent.

Sanitation/Salvage Cutting - Removal of individual trees killed or injured by fire, insects, disease, etc., and the removal of those trees likely to die prior to final harvest cut so as to utilize merchantable material.

Sawlog - A log considered suitable in size and quality for producing sawn timber.

Scenic Quality - The degree (high, moderate, and low) of visual harmony and variety within a landscape as compared to other units within the physiographic region.

Scribner Log Rule - A log rule constructed from diagrams which shows the number of 1-inch boards which can be drawn in a circle representing the small end of a log; assumes a 1/4-inch saw kerf, makes a liberal allowance for slabs, and disregards taper.

Sediment Yield - The quantity of sediment, measured in dry weight or by volume, transported in water flowing through a stream cross-section in a given time. Consists of both suspended sediment and bedload.

Sedimentary Rock - A rock formed from materials deposited from suspension or precipitated from solution and usually more or less consolidated; e.g. sandstone, shale, limestone and conglomerates.

Seldom Seen - Portions of the landscape which are generally not visible from observer positions, or areas which are visible beyond 15 miles from those positions.

Sensitive Species - Species not yet officially listed but which are undergoing a status review or are proposed for listing according to Federal Register notices published by the Secretary of the Interior or Secretary of Commerce, or according to comparable State documents published by State officials. (Reference Instruction Memo W.O. 80-722)

Sensitivity Level(s) - The degree (high, medium, low) of user interest in scenic quality and concern about possible changes in the landscape features of an area. The two criteria for determining sensitivity levels are user volumes and user attitudes.

Seral Stage - The relatively transitory communities within a sere.

Sere - The whole series of communities which develop in a given situation.

Shelterwood Cutting - A series of partial cuttings designed to establish a new crop of trees under the protection of the old.

Silviculture - The art of producing and tending a forest.

Siphon - A pipe which uses atmospheric pressure to transfer water from one point to another against gravity.

Site Class - A measure of the relative productive capacity of an area for timber or other vegetation.

Site Preparation - Any action taken in conjunction with a reforestation effort (natural or artificial) to create an environment which is favorable for survival of suitable trees during the first growing season. This environment can be created by altering ground cover, soil or microsite conditions, using biological, mechanical, or manual clearing, prescribed burning, herbicide or a combination of methods.

Slash - The branches, bark, tops, cull logs, and broken or uprooted trees left on the ground after logging has been completed.

Slump - Rotational failure of a discrete block of soil on a failure plane that is curved from top to bottom and from side to side. The block rotates downward and outward along this failure plane while remaining more or less intact.

Smolt - A young salmon or trout that is migrating from freshwater to the ocean.

Snag - A standing dead tree from which the leaves and most of the limbs have fallen.

Soil - The unconsolidated mineral and organic material on the immediate surface of the earth that serves as a natural medium for the growth of land plants.

Soil Mapping Unit - A combination of soils, or miscellaneous land type or types that can be shown at the scale of mapping for the defined purposes of the survey; the basis for the delineations of a soil survey map.

Soil Productivity - The capacity of a soil in its normal environment to produce a specified plant or

sequence of plants under a specified system of management.

Standard Industrial Classification (SIC) - An industrial classification system as defined by the Office of Management and Budget; defines industries in accordance with the composition and structure of the economy and covers the entire field of economic activity. Refer to lumber and wood products for an explanation of SIC 24.

State Historic Preservation Officer (SHPO) - The official within each State, authorized by the State at the request of the Secretary of the Interior, to act as a liaison for purposes of implementing the National Historic Preservation Act of 1966.

Stream Order - A system of stream classification. Each small unbranched tributary is a first-order stream. Two first-order streams join to make a second-order stream. A third order stream has only first and second-order tributaries, and so forth.

Subsurface Flow - Horizontal movement of water through the soil profile.

Succession - The orderly process of plant community change. Process by which one plant community will succeed another over time given the same climatic conditions.

Surplus Inventory - A temporary (1-3 decades) excess of growing stock over and above that which is necessary to sustain the even flow level.

Survival Cover - Cover required by animals to mitigate effects of a period of severe weather that cannot be met by thermal cover. The objective of survival cover is to provide a forest stand structure which provides shade and cooling during times of high temperature and will intercept snow during severe storms and provide significant quantities of forage in the same stand. Stand closure should be at least 75 percent or more.

Suspended Sediment - Sediment suspended in a fluid by the upward components of turbulent currents or by colloidal suspension.

Sustained Yield - The yield that a forest can produce continuously at a given intensity of management.

Teratogenicity - Ability of a substance to cause abnormal development of a fetus.

Texture (soil) - The relative proportion of sand, silt and clay (expressed as percentages) in a soil; grouped into standard classes and subclasses in the USDA Soil Survey Manual.

Thermal Cover - Cover used by animals to ameliorate effects of weather. For elk, a stand of conifer trees which are 40 feet or more tall with an average crown closure of 70 percent or more. For deer, cover may

include saplings, shrubs or trees at least 5 feet tall with 75 percent crown closure.

Timber Lands - See Forest Land.

Timber Production Base - Acres included in the calculation of the allowable cut (see Intensive Forest Management Lands).

Timber Production Capability Classification (TPCC) - A classification system that identifies the commercial forest and base capable of producing timber on a sustained yield basis.

True Fir - A member of the genus *Abies*, e.g., white fir (*Abies concolor*). Douglas-fir (*Pseudotsuga menziesii*) is not a true fir.

Understory Species - Shade-tolerant plant species which characteristically grow beneath the forest canopy; e.g., blackberry and rhododendron.

Unit Resource Analysis (URA) - A BLM planning document which contains a comprehensive inventory and analysis of the resources within a specified geographic area and an analysis of their potential for development.

Visitor-day - Twelve visitor-hours, which may be aggregated continuously, intermittently or simultaneously by one or more persons. Visitor-days may occur either as recreation visitor-days or as non-recreation visitor-days.

Visual Resource Basic Elements - The four major elements (form, line, color, texture) which determine how the character of a landscape is perceived.

Visual Resources - The land, water, vegetation, animals and other features that are visible on all public lands (scenic values).

Visual Resource Management (VRM) - The planning, design and implementation of management objectives to provide acceptable levels of visual impacts.

Visual Resource Management Classes - The degree of alteration that is acceptable within the characteristic landscape. Based upon the physical and sociological characteristics of any given homogeneous area and serves as a management objective to mitigate or avoid adverse visual impacts. Class I provides the highest level of protection for scenic values, and Class IV the lowest level.

Volatilize - To evaporate; to change from a liquid to a gas.

Water Quality - The combined physical, chemical and biological characteristics of water bodies.

Watershed - The area drained by a given stream.

Wetland or Wetland Habitat - Permanently wet or intermittently flooded areas where the water table (fresh, saline, or brackish) is at, near, or above the soil surface for extended intervals, where hydric wet soil conditions are normally exhibited, and where depths generally do not exceed 2 meters. Vegetation is generally comprised of emergent water-loving forms (hydrophytes) which require at least a periodically saturated soil condition for growth and reproduction. In certain instances, vegetation may be completely lacking.

Wildlife Tree - A live tree remaining after timber harvest that can become a snag for cavity dwelling wildlife.

Yarding - The act or process of conveying logs to a landing.

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